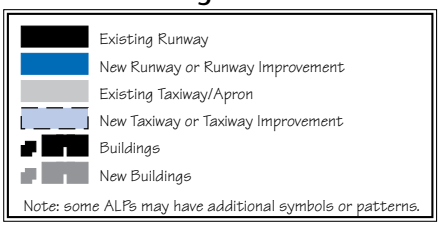
Appendix D

New Runway & Runway Extension Construction

Appendix D contains current airport layouts for those airports among the top 100 airports[1] that are considering or have plans for the construction of new runways or extensions to existing runways. The airport layouts show simplified drawings of the existing airports, with proposed runway and runway extension projects indicated in blue. Airport layouts for the remainder of the top 100 airports are contained in Appendix E.

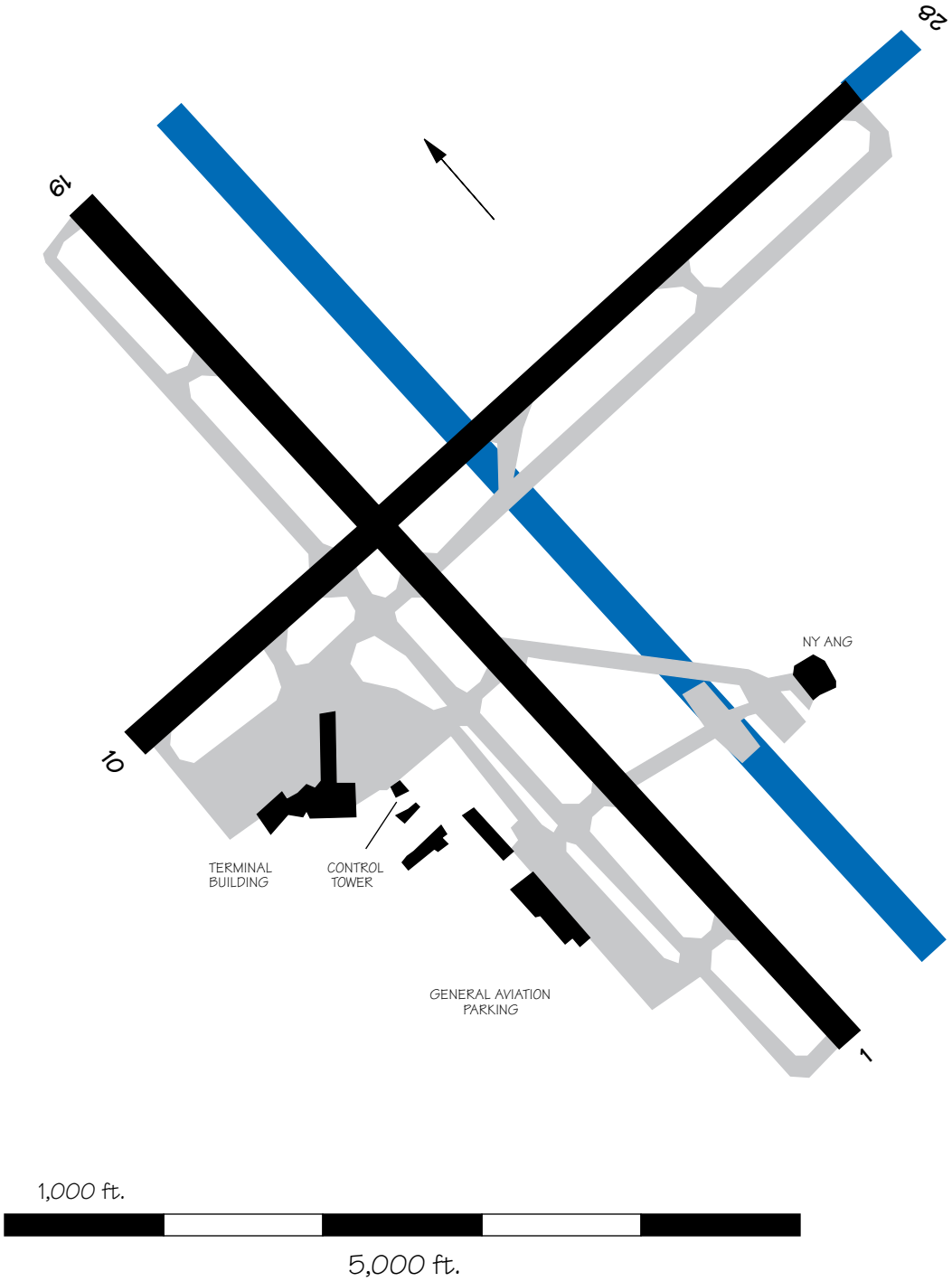
Legend



1. Based on 1992 passenger enplanements (see Appendix A, Table A-1).

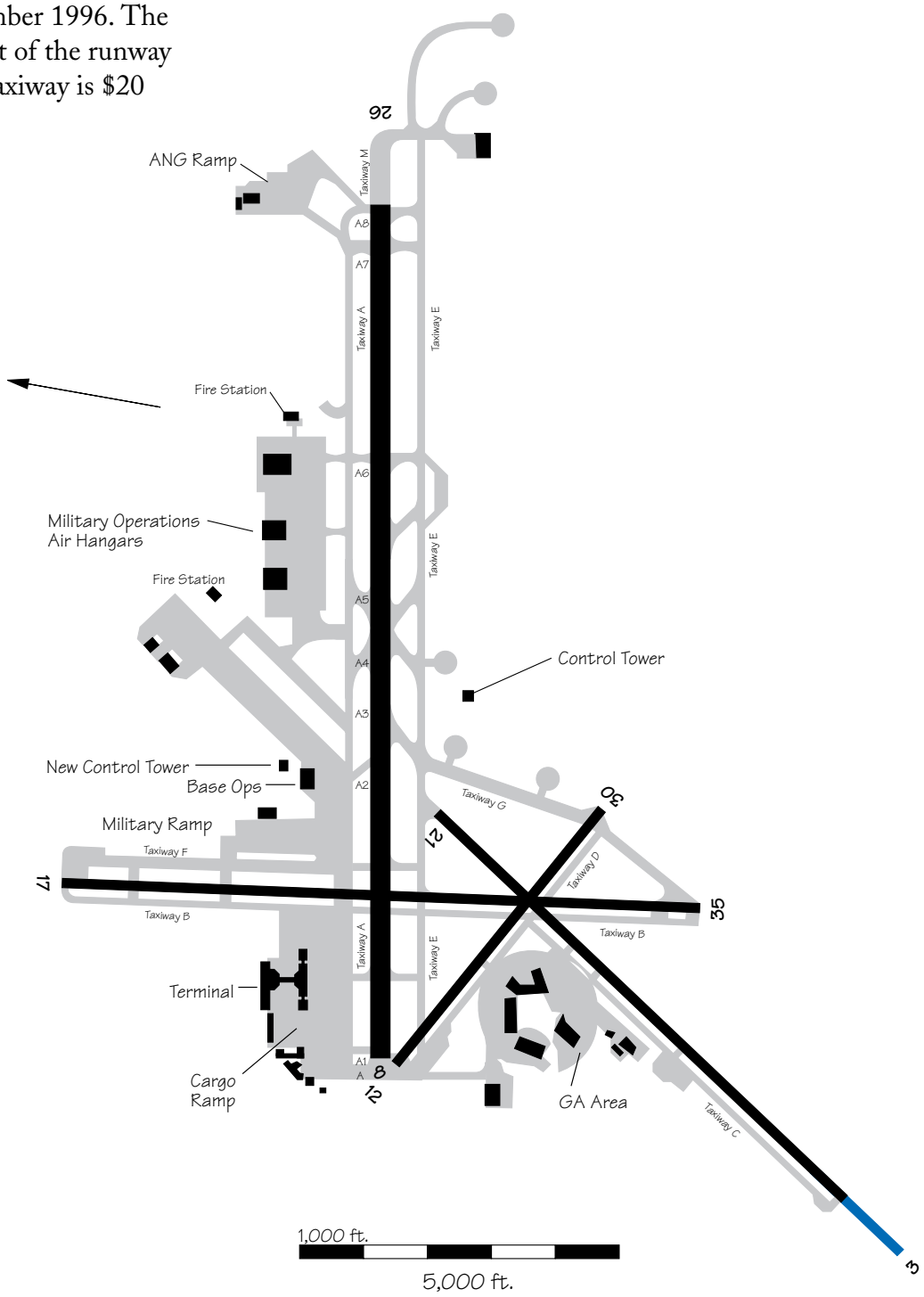
Albany County Airport (ALB)

Construction of an extension to Runway 10/28 is planned. The estimated cost of construction is $5.8 million. A new parallel Runway 1R/19L is also planned. The estimated cost is $7.5 million.



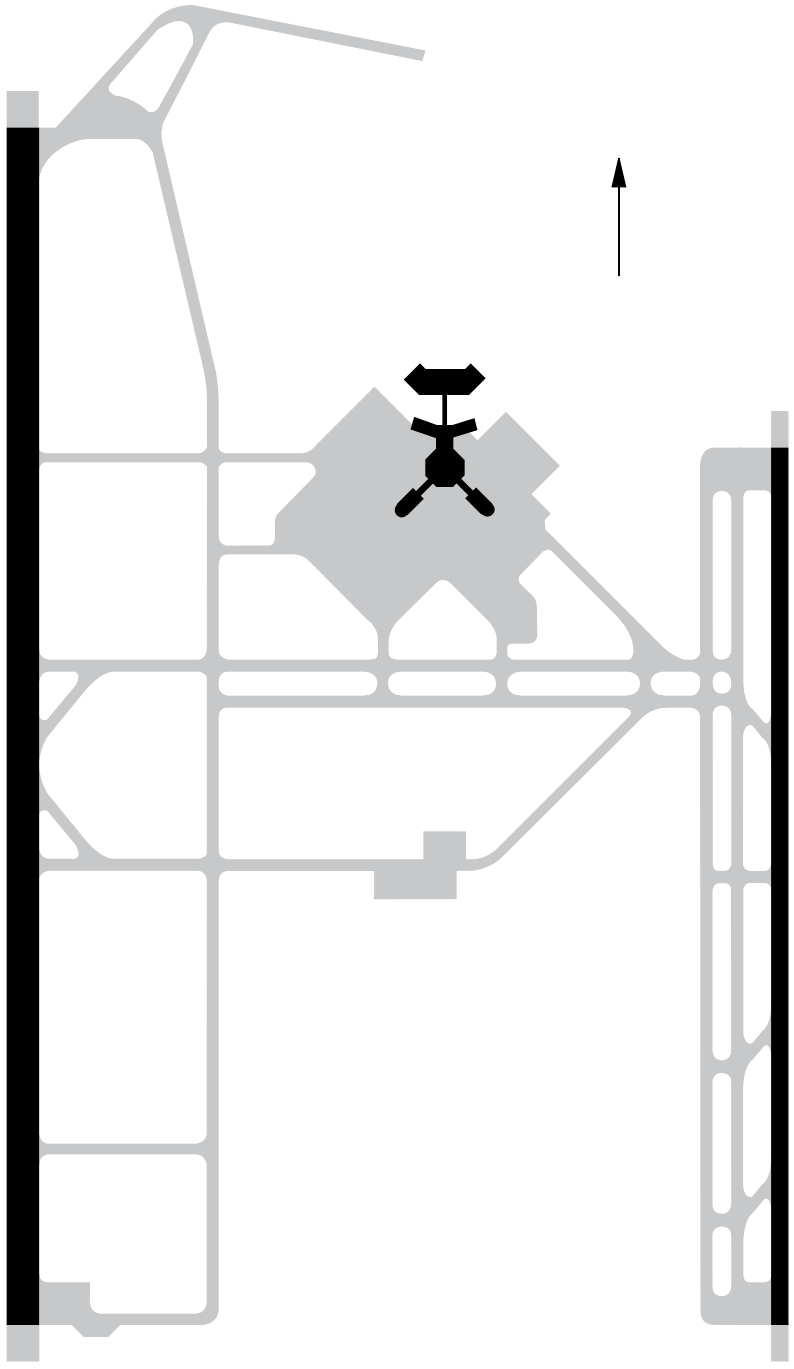
Albuquerque Int'l Airport (ABQ)

A 1,500 foot extension to Runway 3/21 will provide an 8,800 foot runway, eliminating the intersection with Runway 8/26. The expected operational date is December 1996. The estimated cost of the runway and parallel taxiway is $20 million.



Austin Robert Mueller Municipal Airport (Bergstrom) (AUS)

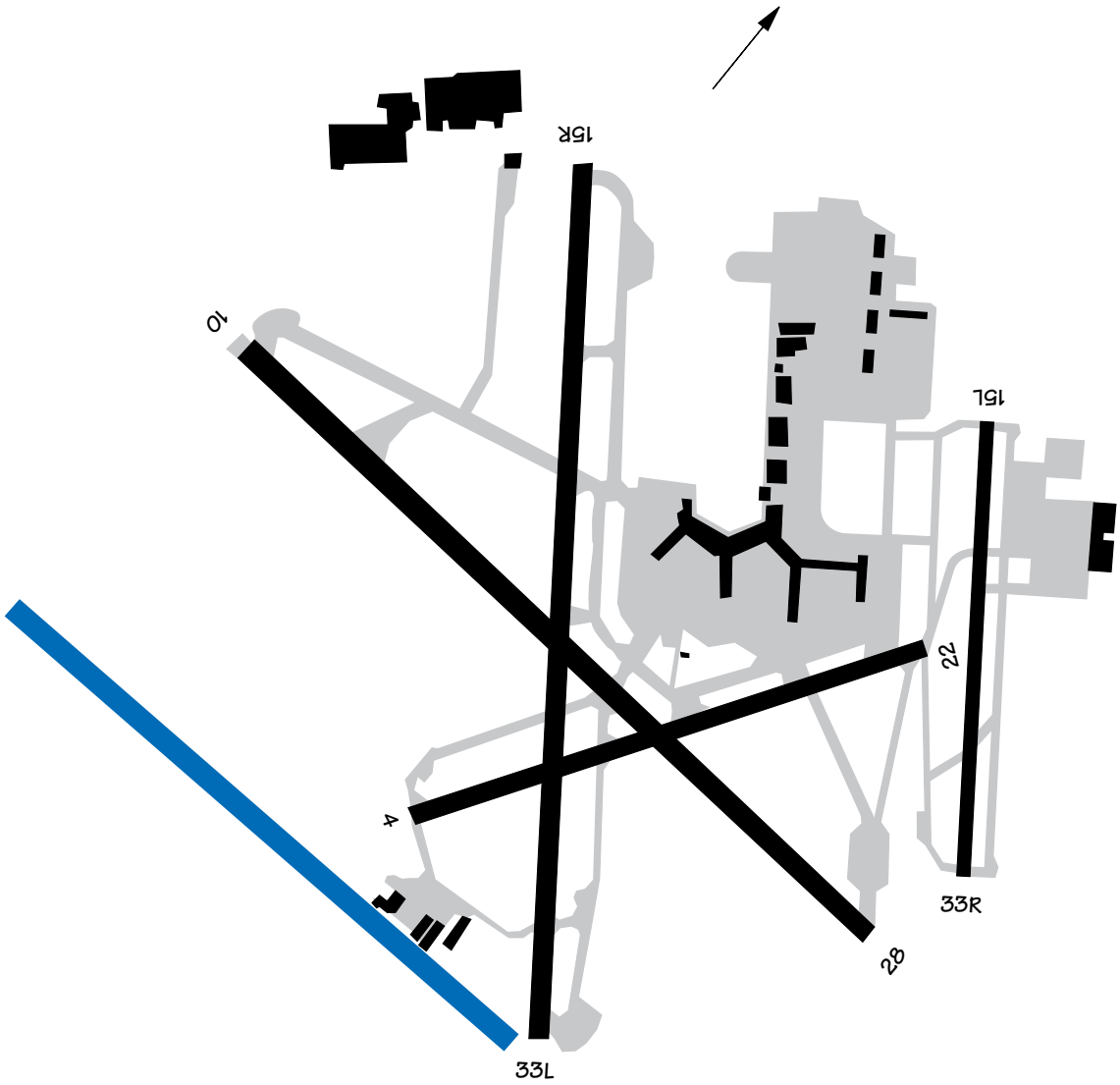
The community has approved the sale of revenue bonds for the development of a new airport. The present Robert Mueller Airport cannot be expanded. Bergstrom Air Force Base (AFB) was transferred to the city on October 1, 1993, and the city is now planning to construct a new parallel runway and relocate all commercial activity there in 1998. The total estimated project cost is $583 million. The city has an Airport Master Plan under development. Environmental studies are in progress by the Air Force and the city. Since Robert Mueller Airport will close upon completion of the new airport, no capacity enhancements are planned at Mueller.



Bergstrom Air Force Base Conversion
Opening Day Layout Plan
as of 1-31-94

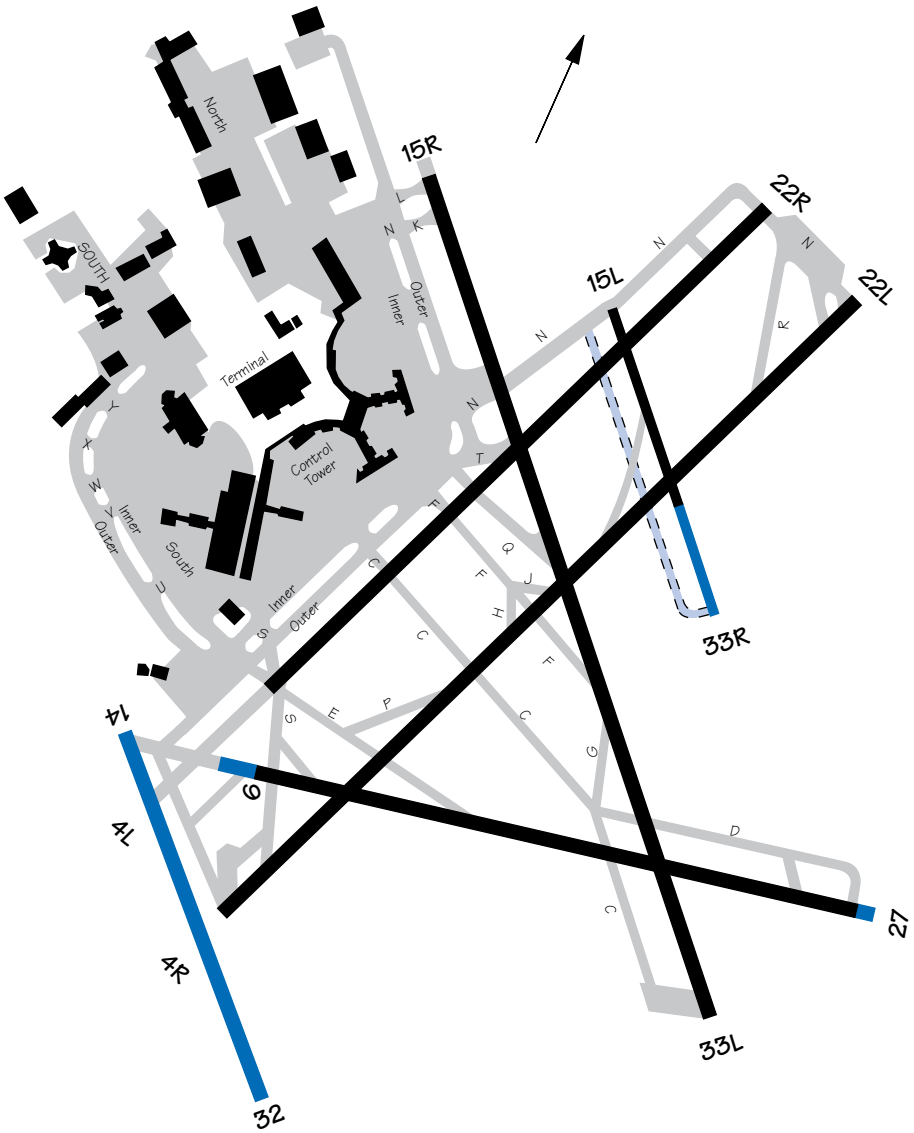
Baltimore-Washington Int'l Airport (BWI)

Construction of an extension of Runway 10/28 began June 1, 1993, and the extension should be operational October 1, 1994. The estimated cost of construction is $12 million. A new 7,800-foot runway, Runway 10R/28L, is planned to be constructed 3,500 feet south of Runway 10/28 by 2003. When Runway 10R/28L is constructed, Runway 4/22 will be converted to a taxiway.



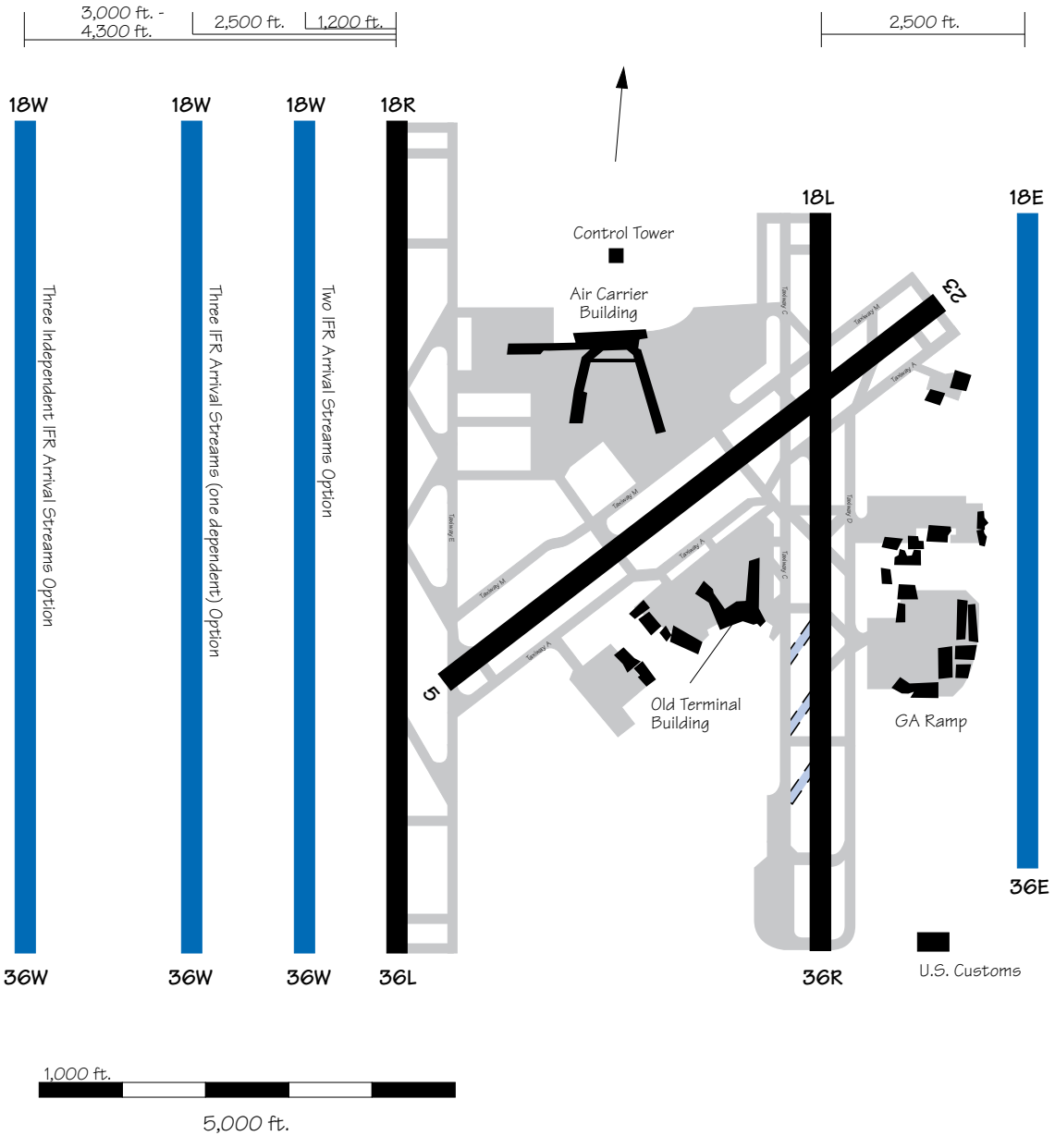
Boston Logan Int'l Airport (BOS)

A new uni-directional commuter runway (Runway 14/32) 4,300 feet from Runway 15R/33L, an extension of Runway 15L/33R to 3,500 feet, and a 400-foot extension of Runway 9 are being studied.



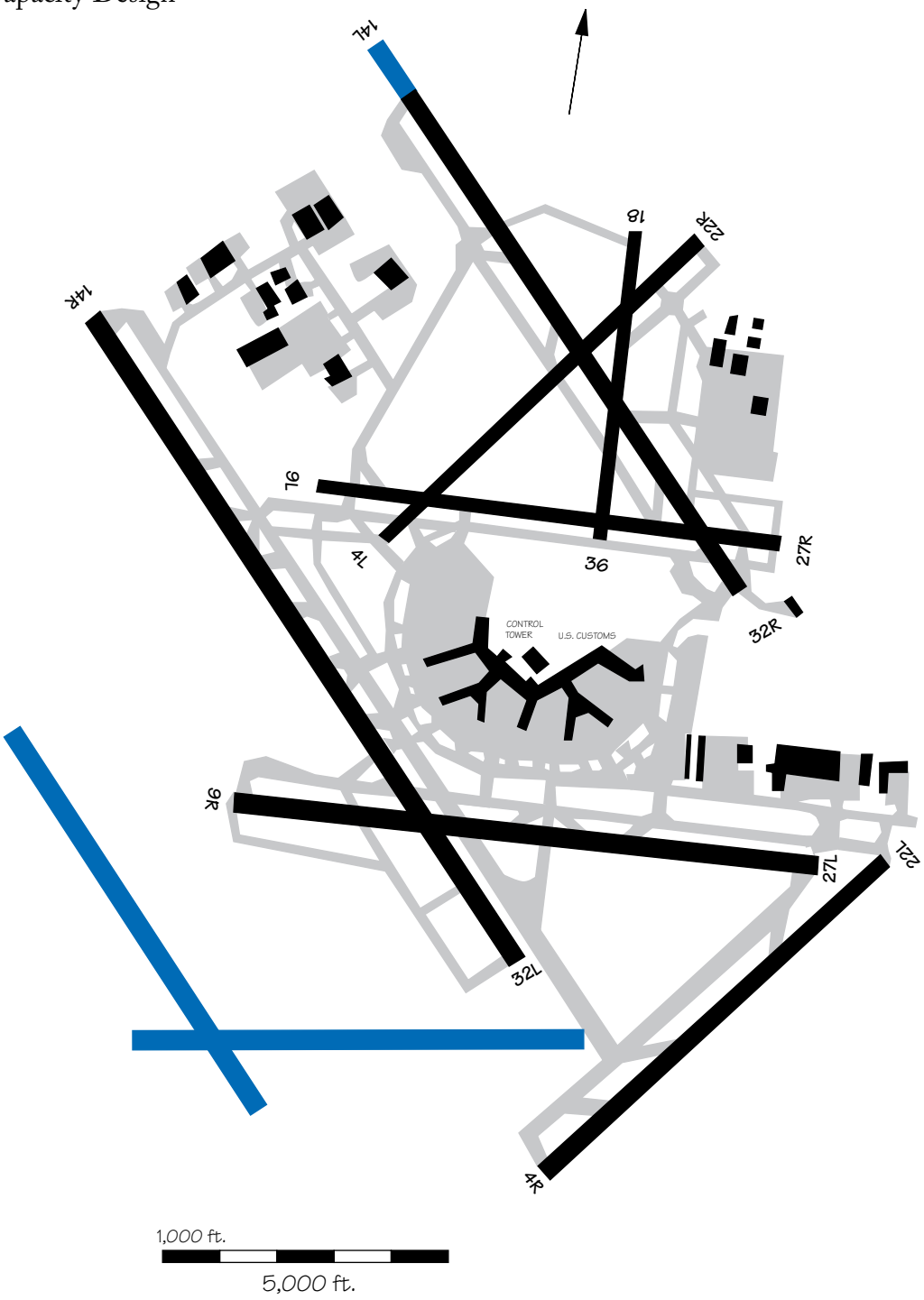
Charlotte/Douglas Int'l Airport (CLT)

Construction has been completed on the extension of Runway 18L/36R 1,000 feet to the south to provide simultaneous approach capability during noise abatement hours. Plans are to open a third parallel 8,000-foot runway west of Runway 18R/36L in 1999 that would permit dependent IFR arrivals. The Capacity Team also recommended the study of a fourth parallel runway east of 18L/36R. Dependent triple or quadruple IFR approaches could become available with the construction of this runway.



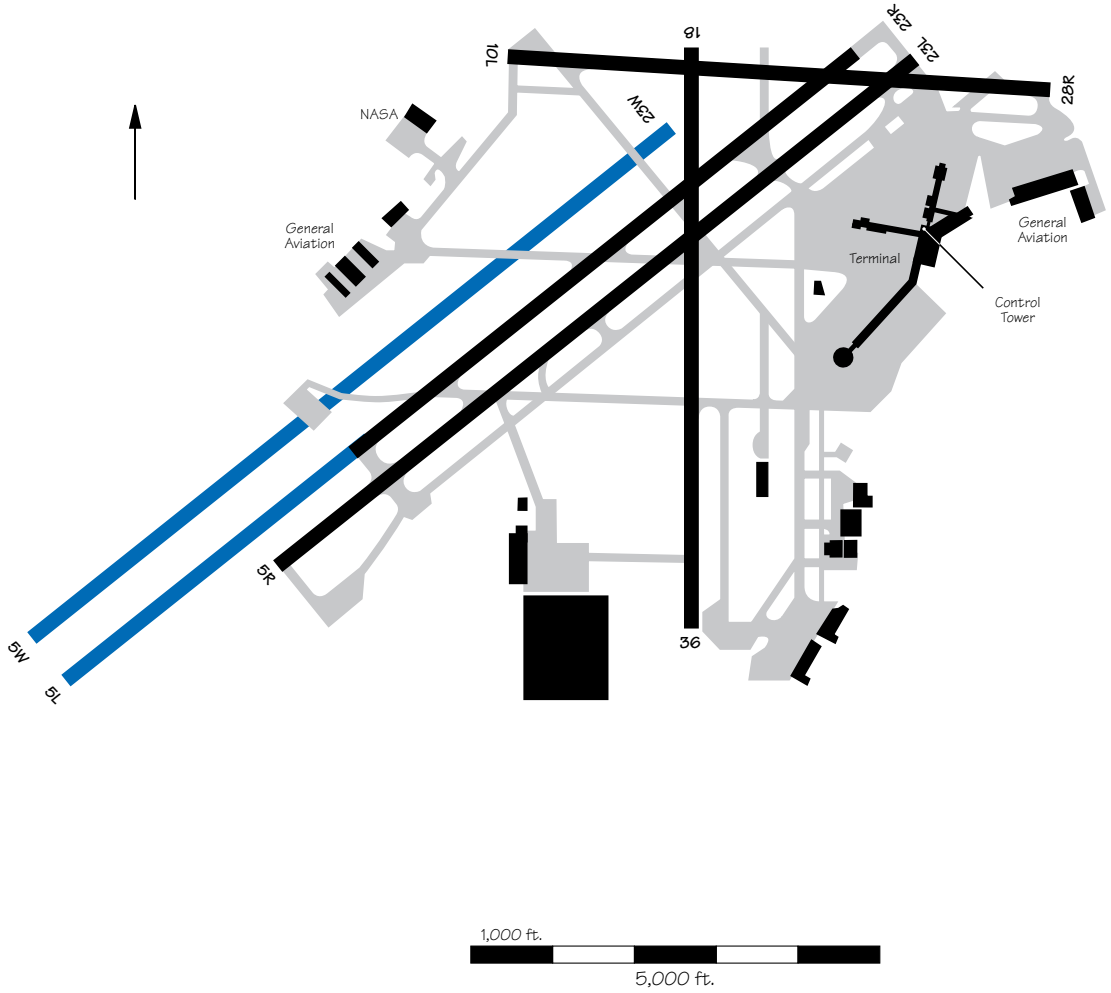
Chicago O'Hare Int'l Airport (ORD)

New air carrier Runways 9/27 and 14/32, extensions to Runways 14L and 22L, and the relocation of Runways 4L/22R and 9L/27R have been recommended by the Chicago Airport Capacity Design Team.



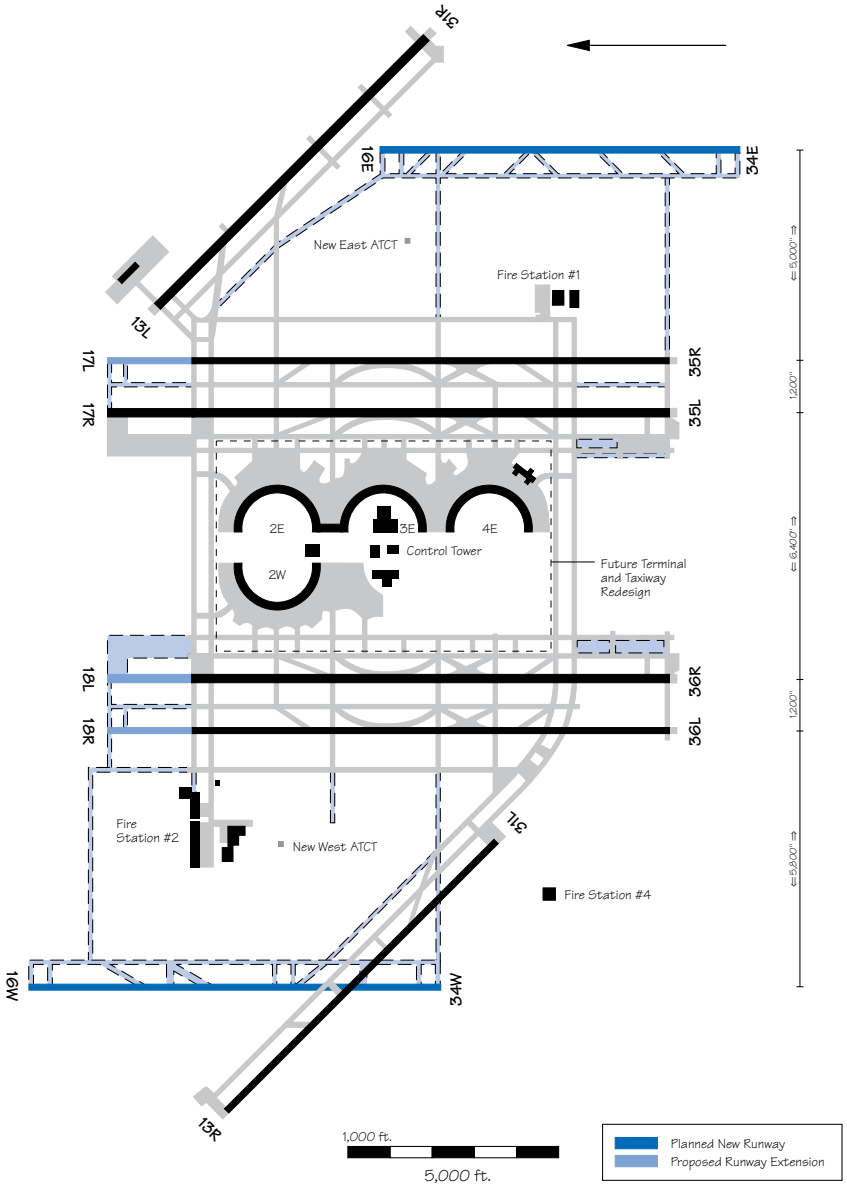
Cleveland Hopkins Int'l Airport (CLE)

A Master Plan Update is currently being coordinated. The preliminary Airport Layout Plan shows construction of a new Runway 5W/23W that would be 9,600 feet long and 150 feet wide. Construction is expected to be completed in 1997 at a cost of $125 million. Also included in the development plan is an extension of the existing Runway 5L/23R from 7,095 feet to 12,000 feet at an estimated cost of $50 million and conversion of the existing Runway 5R/23L to a parallel taxiway at a cost of $3 million. All of this work is scheduled for completion in 2000.



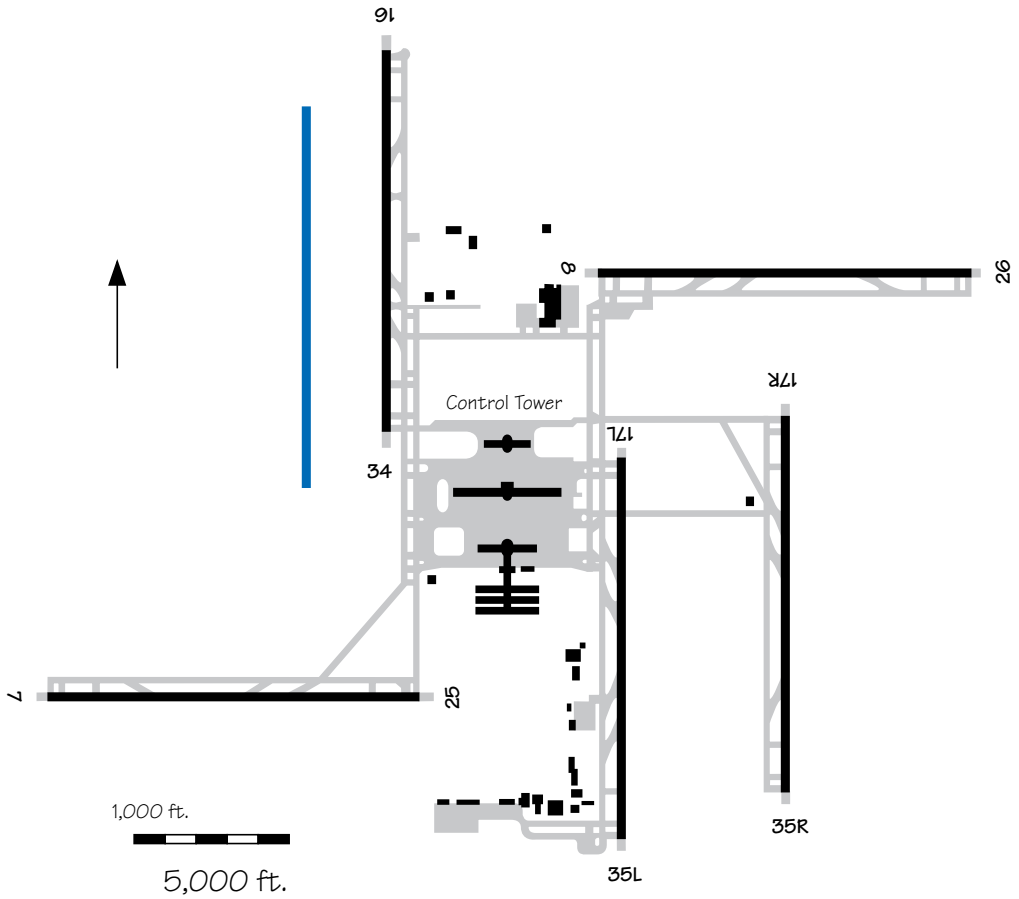
Dallas-Fort Worth Int'l Airport (DFW)

Proposed 2,000-foot extensions to all of the north/south parallel runways will provide an overall length of 13,400 feet for each. The estimated cost of each extension is $25 million. The extension of Runway 17R/35L has been completed and was operational September 16, 1993. Also planned are two more parallel runways, Runway 16L/34R and Runway 16R/34L. The east runway, Runway 16L/34R, will be 8,500 feet in length. It will be located 5,000 feet east of and parallel to Runway 17L/35R. The estimated cost is $320 million. It is anticipated that the east runway will be operational by 1996. Construction on the west runway, Runway 16R/34L, will begin when warranted by aviation demand. It could be available as early as 2001. The estimated cost is $150 million. It will be located 5,800 feet west of Runway 18R/36L. Runway 16R/34L may be constructed in phases, with the first phase a 6,000 foot runway located north of Runway 13R/31L. The second phase extension to 9,760 feet would intersect and continue south of Runway 13R/31L. These runways could potentially permit triple or quadruple IFR arrival operations (84 and 114 hourly IFR arrivals, respectively) if the multiple approach concepts are approved.



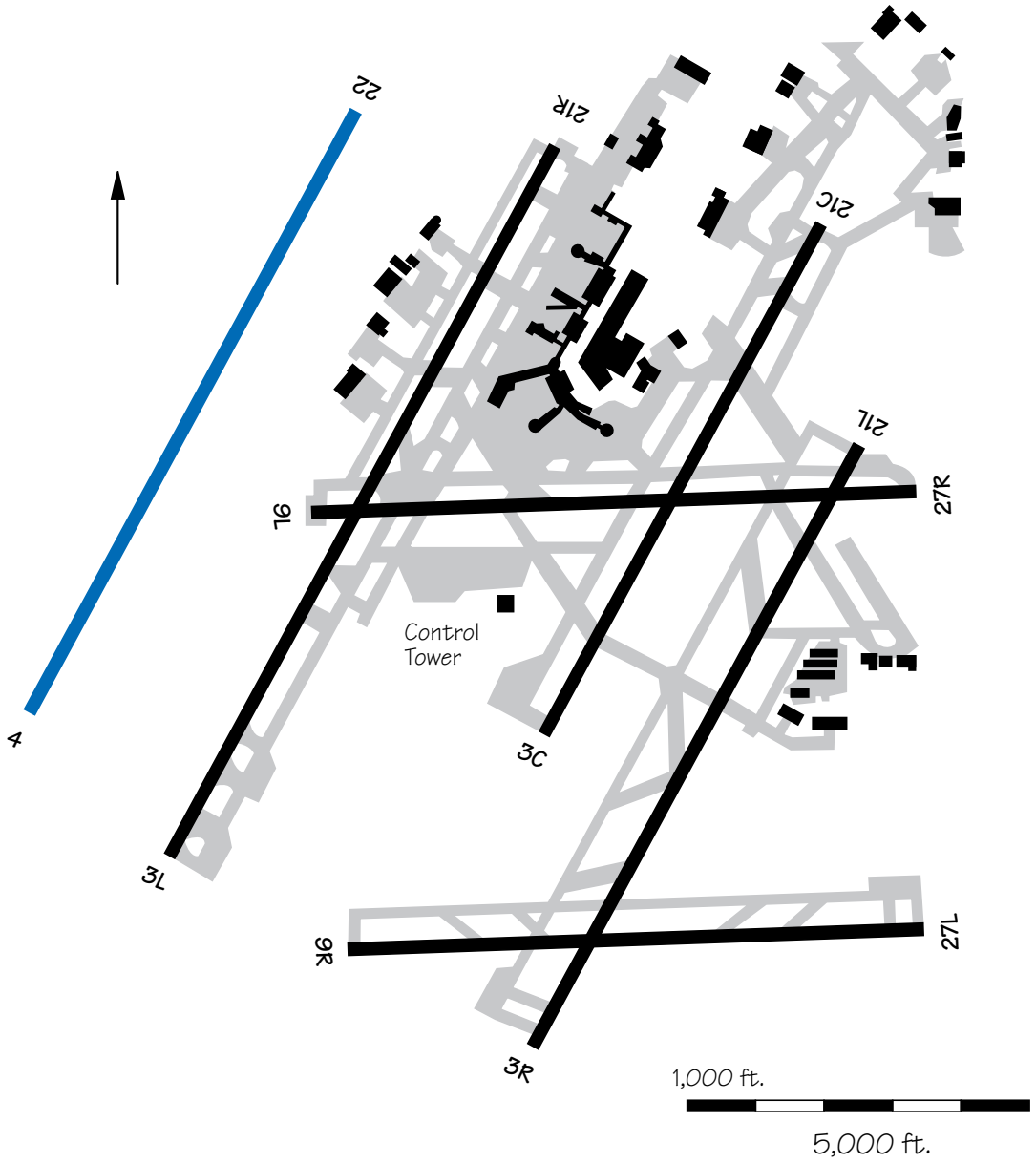
Denver Int'l Airport (DEN)

The initial phase of the new Denver airport will consist of five runways, with a sixth runway added a year after airport opening. The current plan involves four north-south parallels and two east-west parallels. Runway 16R/34L will initially be the farthest west of the four north-south parallels. It will be located 2,600 feet west of Runway 16L/34R and 10,200 feet west of Runway 17R/35L. Runway 17R/35L and Runway 17L/35R will be separated by 5,280 feet. East-west parallels, Runways 7L/25R and 8R/26L, will have centerlines 13,500 feet apart. Runway 7L/25R is south of Runways 16C/34C and 16L/34R. Runway 8R/26L is north of Runways 17R/35L and 17L/35R. Construction at the new airport began in late 1989. The total estimated cost of construction (exclusive of land acquisition and pre-1990 planning and administration costs) is $2.972 billion. The new airport is expected to be operational in 1995 and could potentially operate independent triple or quadruple IFR approaches, if they are approved. This could increase Denver's IFR arrival capacity from 57 to 86 per hour with triples or 114 per hour with quadruples. A second, future phase proposes the construction of up to six more runways.



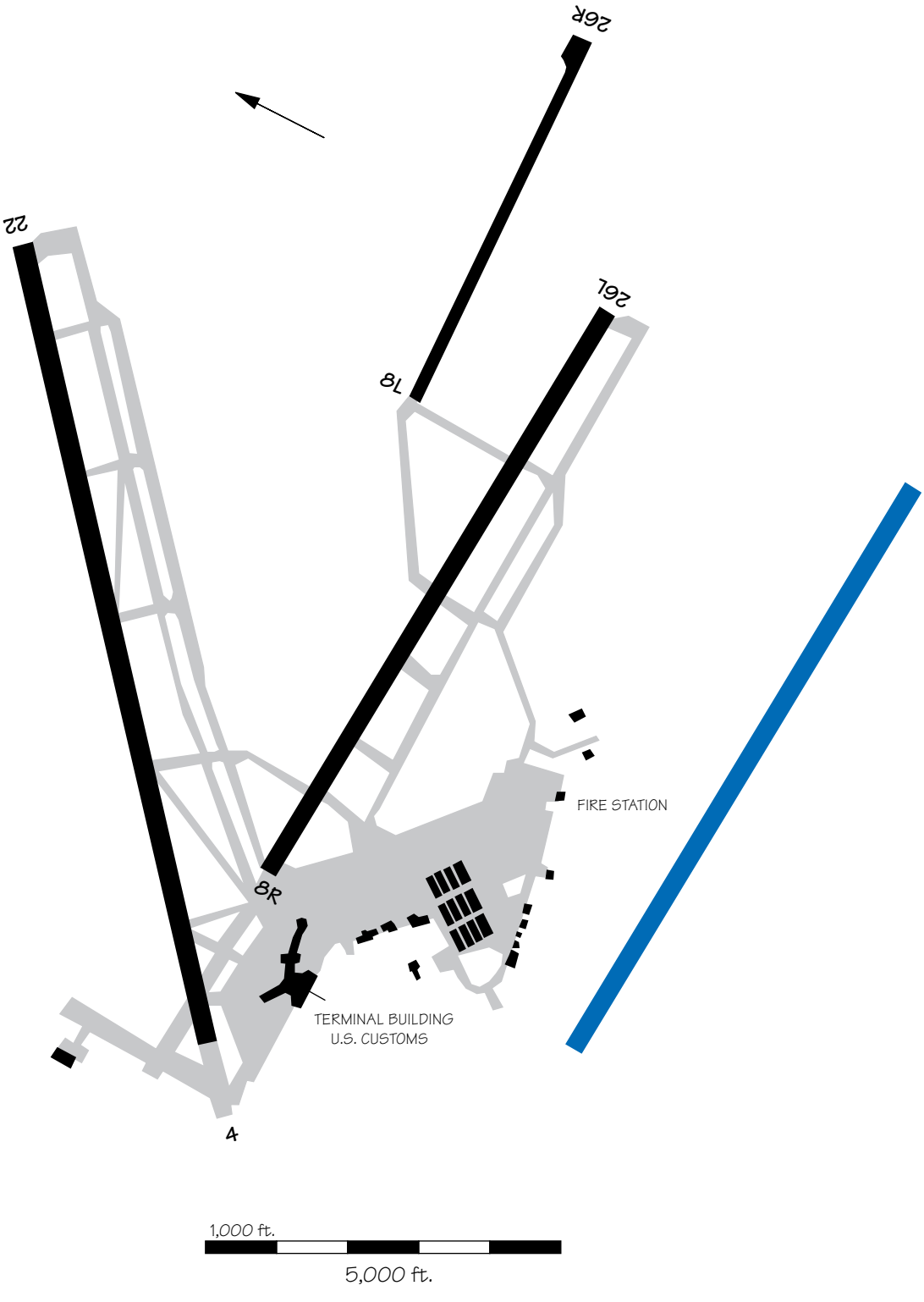
Detroit Metropolitan Wayne County Airport (DTW)

Construction of new Runway 9R/27L was completed in late 1993. The estimated cost of construction was $61.6 million. This new runway will allow DTW to run independent parallel IFR approaches in an east-west configuration, thus matching its current north-south IFR arrival capabilities. A fourth north-south parallel, Runway 4/22, 2,667 feet west of Runway 3L/21R, is also planned. Construction is expected to begin in 1996 and should be completed in 1998. The estimated cost of construction is $54.5 million. This runway could potentially permit triple IFR arrivals with one dependent and one independent pairing. If approved, hourly IFR arrival capacity could increase from 57 to 71. An environmental assessment was submitted in September 1989, and a record of decision was issued in March 1990.



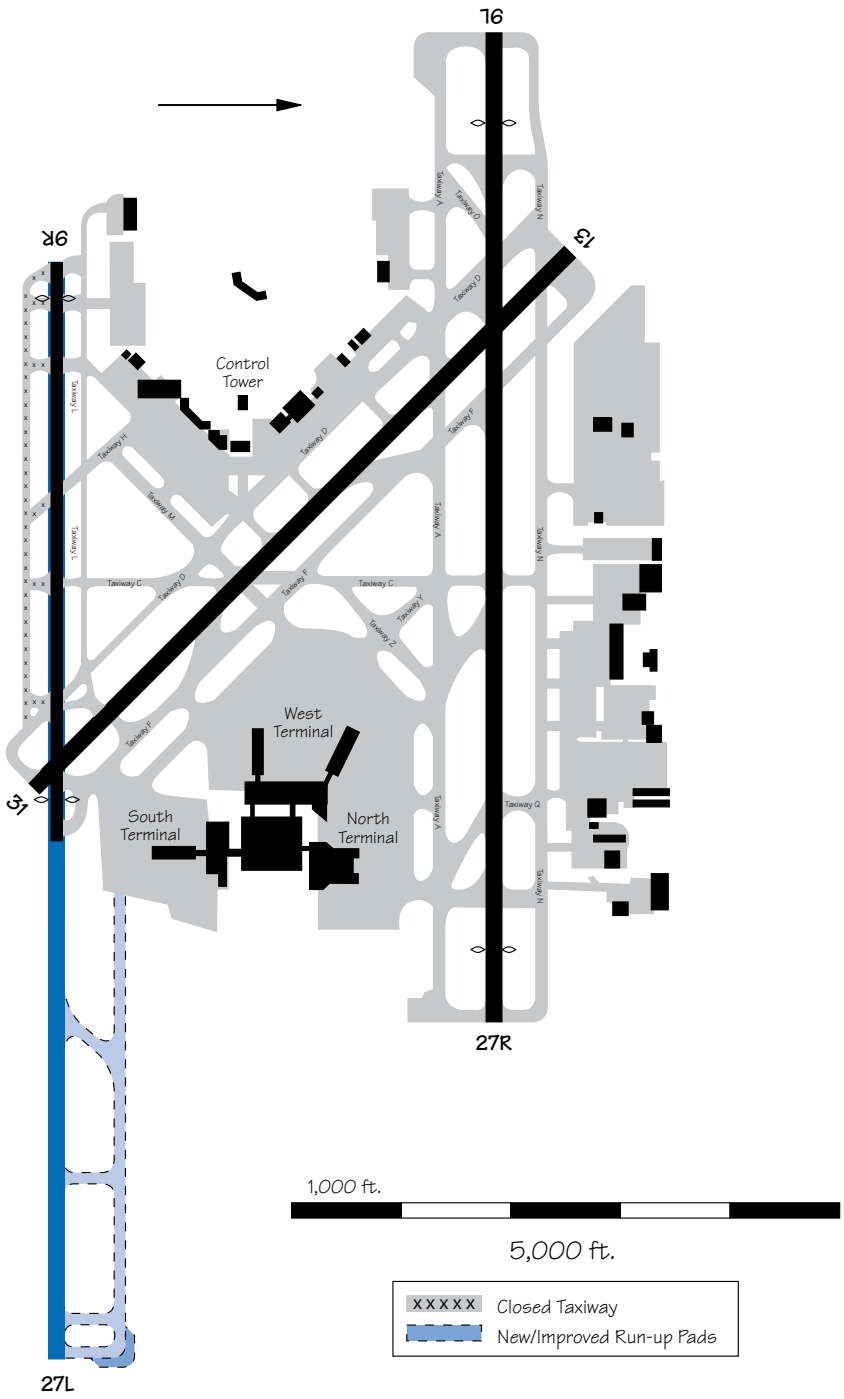
El Paso Int'l Airport (ELP)

A new parallel Runway 8/26 is planned. Construction is expected to begin in 1999 with an estimated cost of $10.7 million.



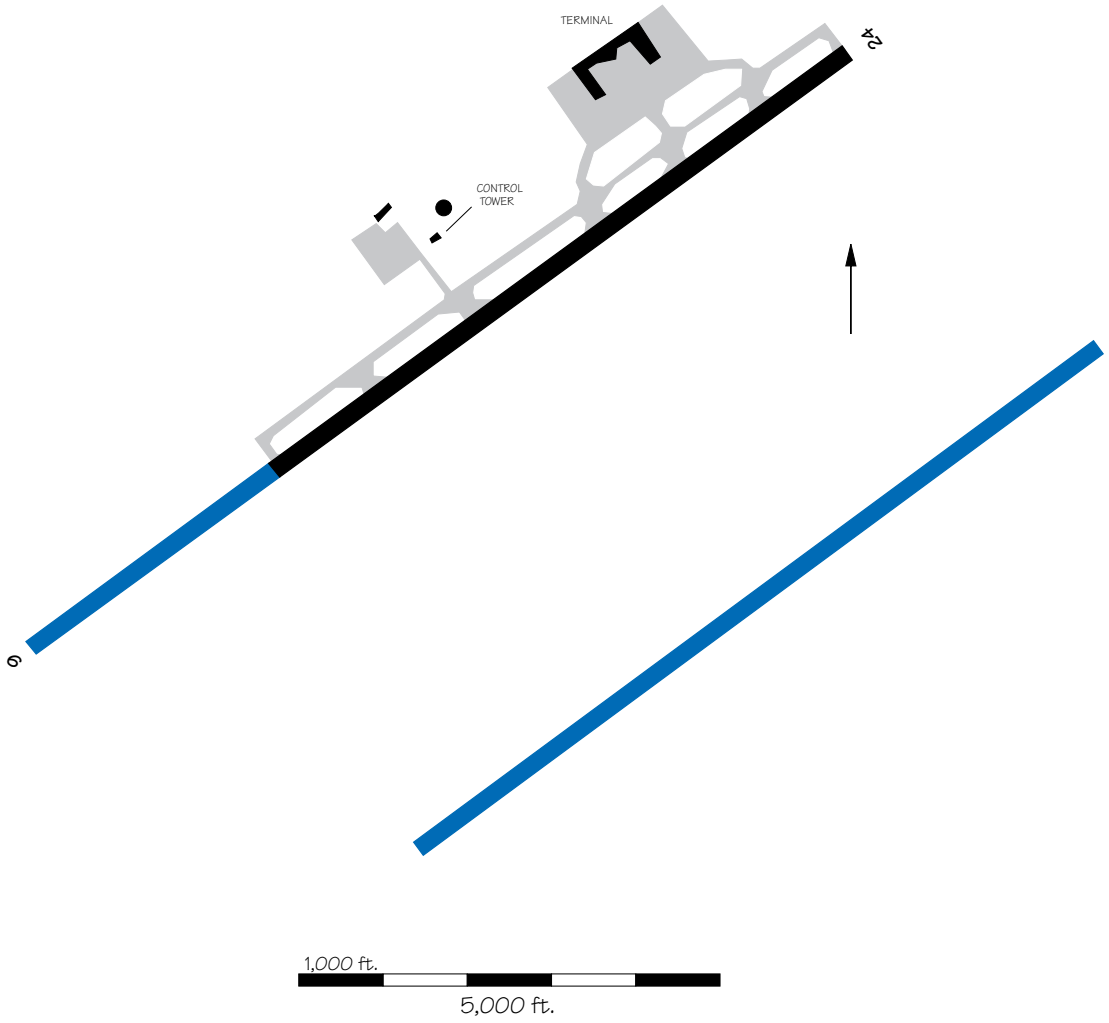
Ft. Lauderdale-Hollywood Int'l Airport (FLL)

An extension of the short parallel Runway 9R/27L to 10,000 feet long by 150 feet wide is planned to provide the airport with a second parallel air carrier runway. Construction is expected to begin in 1997. The estimated cost of construction is $270 million. The anticipated operational date is 2000.



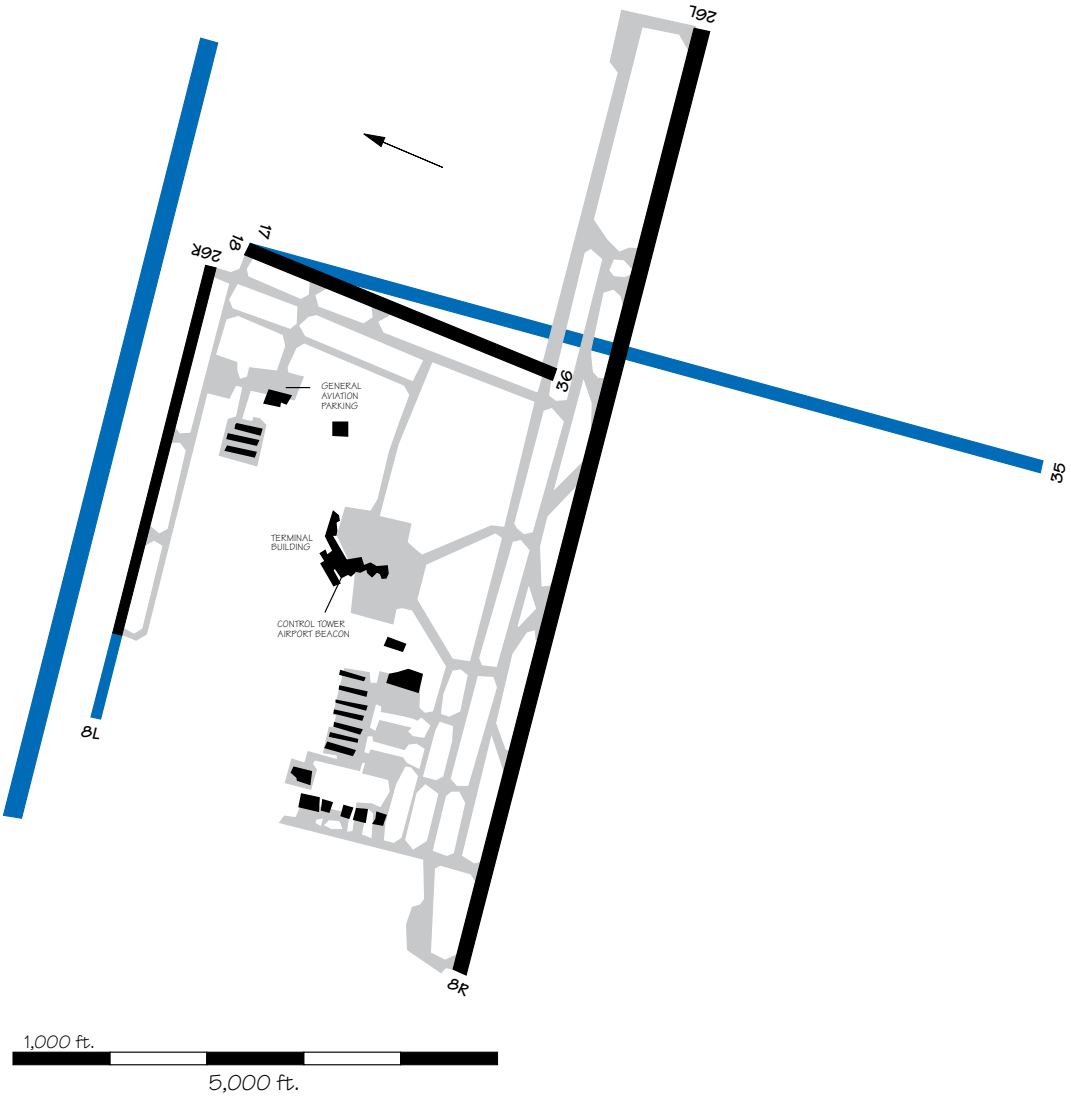
Ft. Myers Southwest Florida Regional Airport (RSW)

Planning has begun for a new 9,000 to 10,000 foot parallel runway, Runway 6R/24L, 4,300 feet or more southeast of Runway 6/24. Construction is expected to begin in 1998. The new runway should be operational by 2000. The estimated cost of the project is $87 million. This new runway will support independent parallel operations, with the potential to increase IFR hourly arrival capacity from 29 to 57. Construction of an extension to Runway 6/24 from 8,400 feet to 12,000 feet began July 14, 1993. The estimated cost of the extension is $20 million, and the estimated operational date is October 1994.



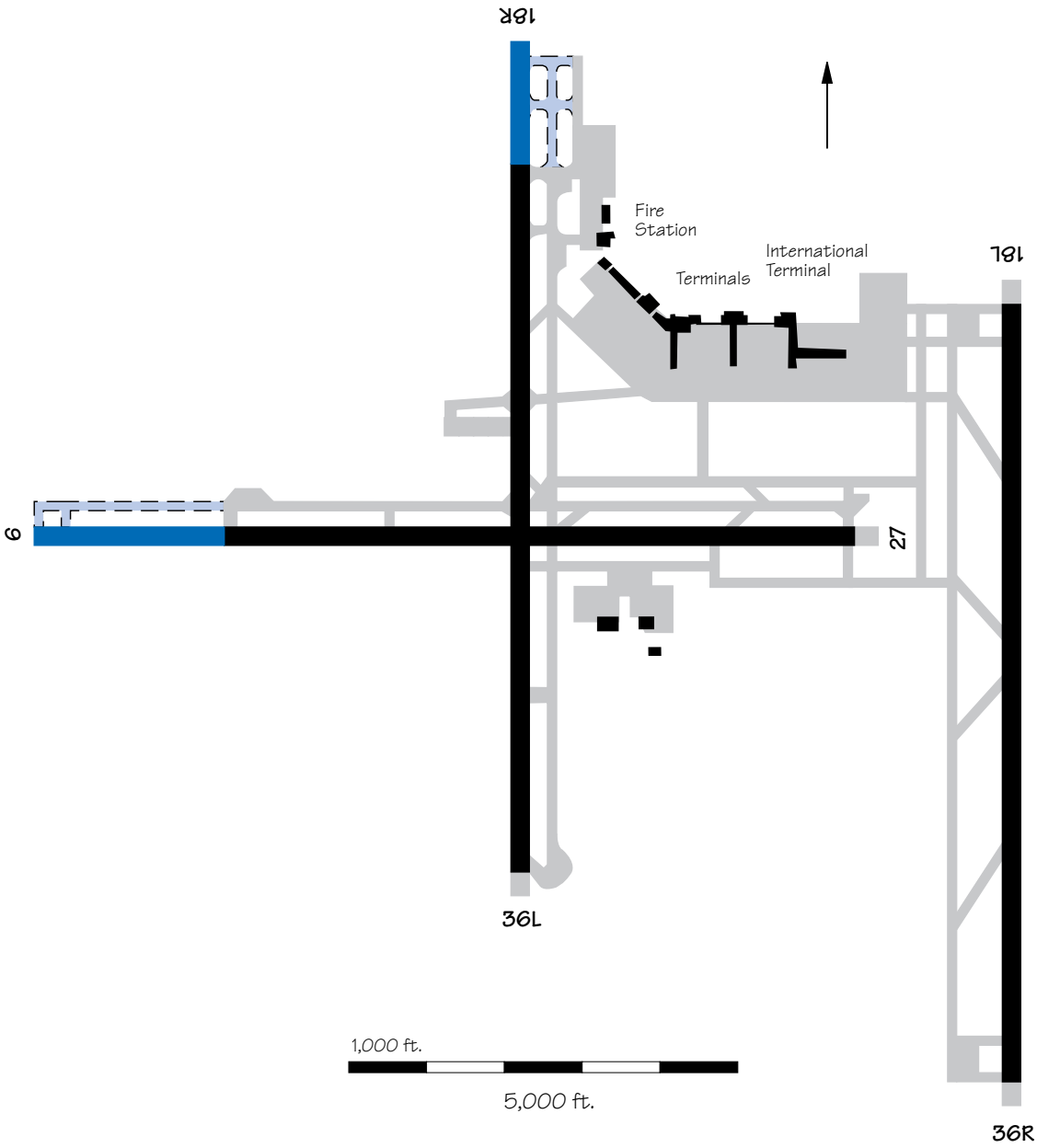
Grand Rapids Kent County Int'l Airport (GRR)

An extension of the existing Runway 8L/26R to 5,000 feet is under construction and will be completed in 1994. Estimated cost of construction is $3.6 million. In the long-range plan, this runway will be converted into a taxiway for a new 7,000 foot Runway 8L/26R. An extension to 8,500 feet and realignment are planned for the cross-wind Runway 18/36 (17/35). The project is expected to start in 1994. Estimated cost of construction is $40 million. The runway will provide wind coverage, noise relief, and reduce winter weather related delays by providing a second air carrier runway. Airport Layout Plan (ALP) and Environmental approvals for these projects were completed in January 1993.



Greater Cincinnati Int'l Airport (CVG)

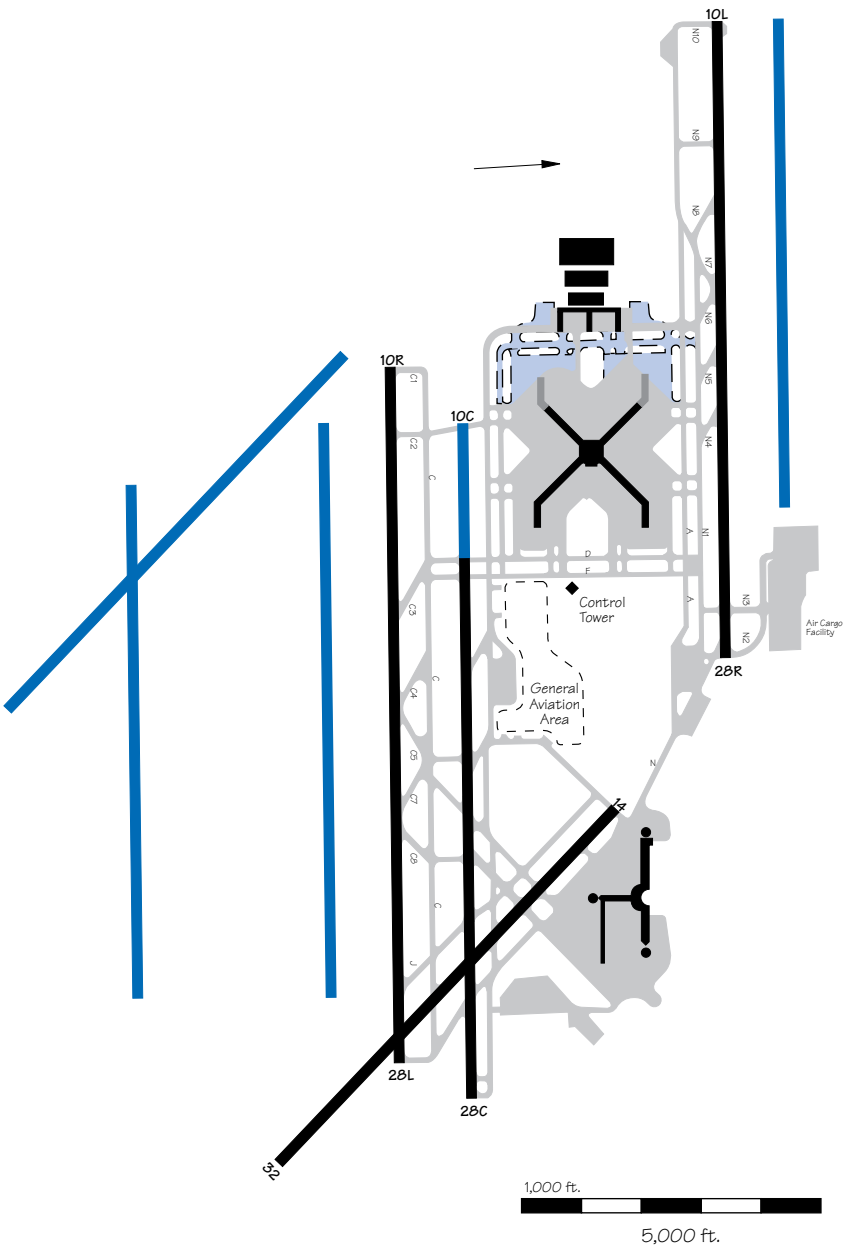
An extension of Runway 18R/36L has been proposed to allow all aircraft to land on Runway 18R and hold short of Runway 27 and to add capacity during noise abatement hours. The estimated cost of construction is $11 million, and the estimated operational date is 1997. An extension of Runway 9/27 is under construction, with an estimated operational date of 1995 and a cost of $20 million, with an additional $5 million to reconstruct the intersection of Runways 9/27 and 18R/36L. This runway will increase capacity during night-time noise abatement operations.



Greater Pittsburgh Int'l Airport (PIT)

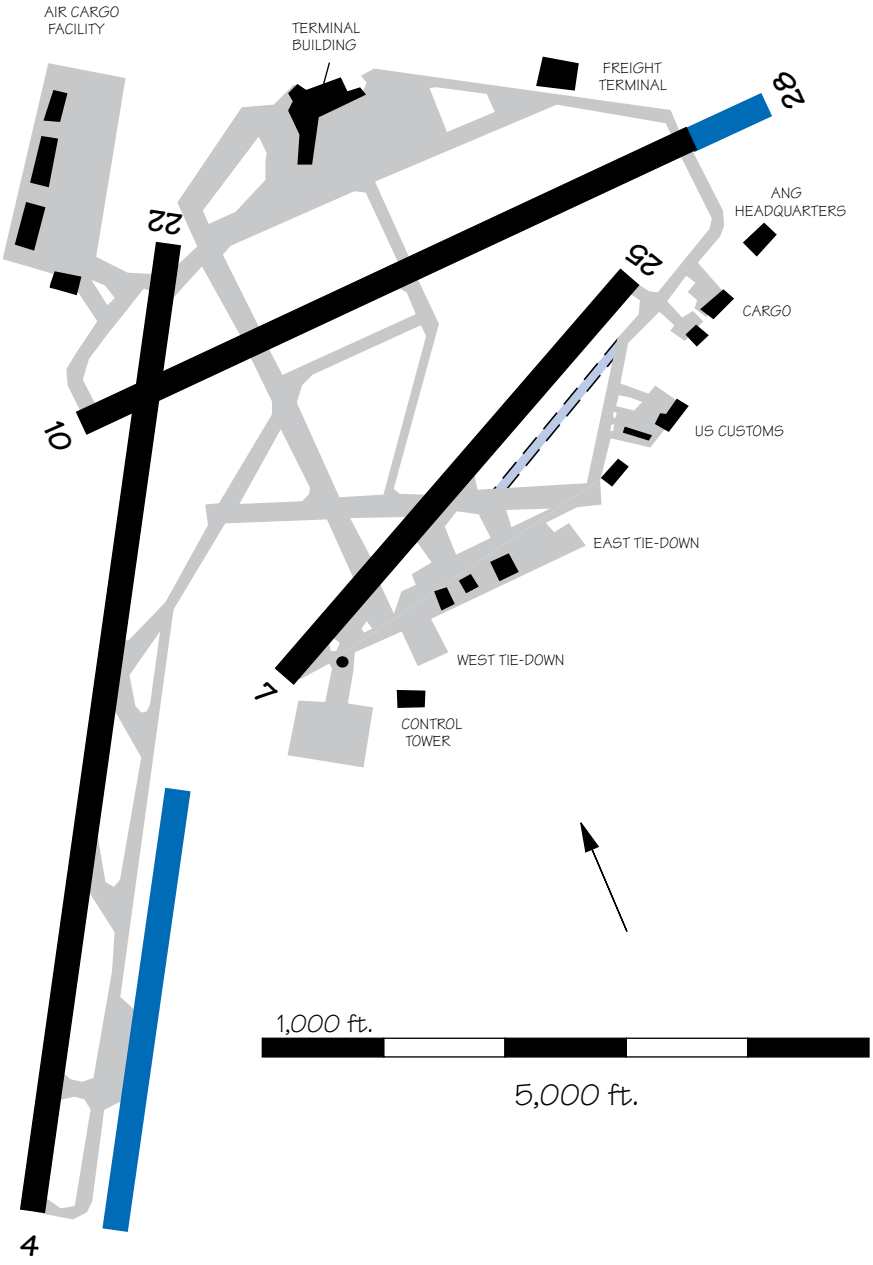
A recently completed Master Plan has recommended that at least two new runways will be needed within a twenty year planning period to accommodate projected Baseline (normal growth) forecast demands and achieve acceptable aircraft delay times and associated delay costs. Construction of the two east/west runways include a northern parallel and a southern parallel, with the latter as the preferred first-build runway. The southern parallel will be located approximately 4,300 feet south of existing Runway 10R/28L and should be operational by the time the airport reaches 495,000 annual aircraft operations.

The northern parallel runway will be located 1,000 feet north of existing Runway 10L/28R and should be operational by the time the airport reaches 522,000 annual aircraft operations. Should forecasts exceed Baseline demands the airport has identified two additional runway options including a close-in south parallel runway located 1,000 feet south of existing Runway 10R/28L and a crosswind runway located 8,700 feet from the existing crosswind Runway 14/32. An environmental Impact Statement is currently being prepared for the development of the fifth runway.



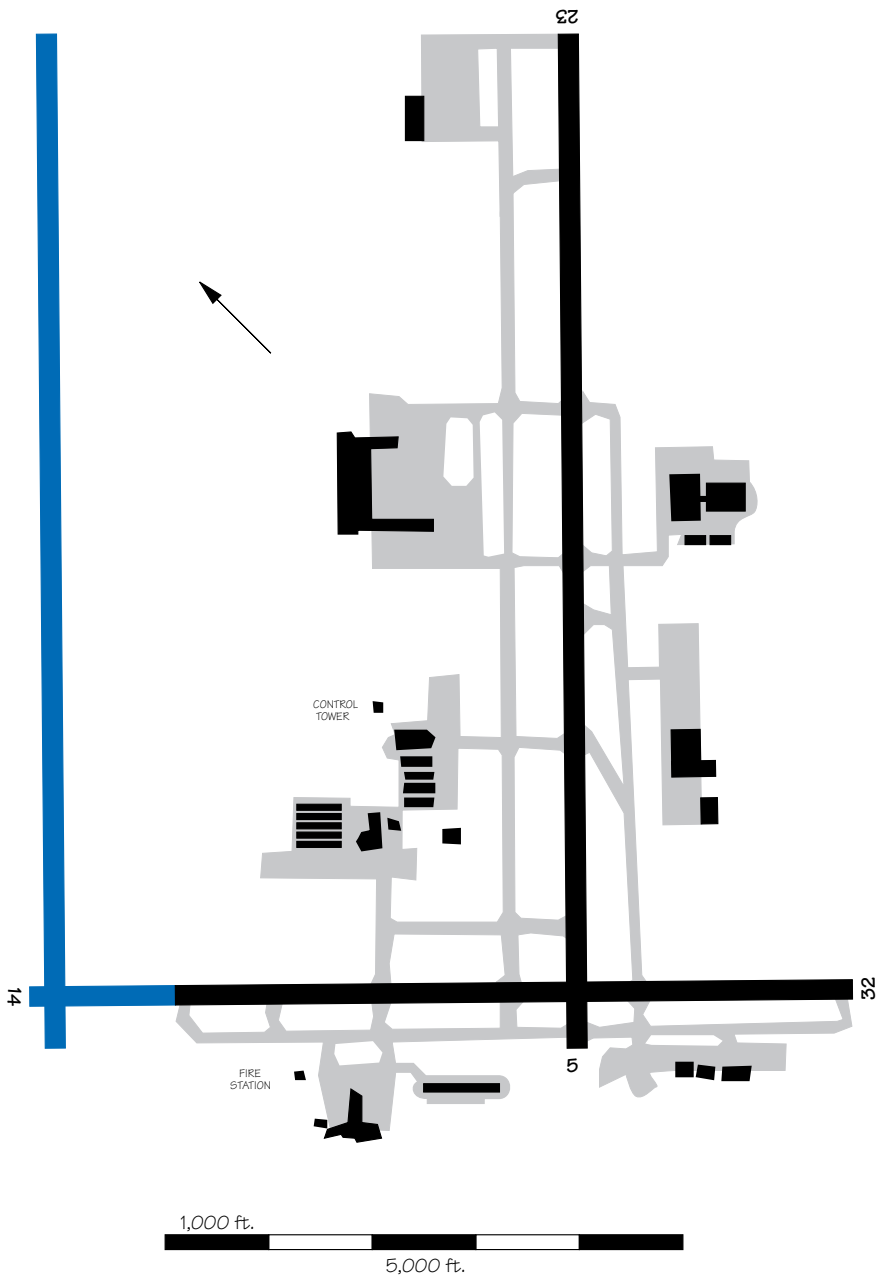
Greater Rochester Int'l Airport (ROC)

Construction of an extension to Runway 10/28 is being considered. The estimated cost of construction is $3.2 million. An extension to Runway 4/22 is also being considered, and is expected to cost $4 million. Construction of a new parallel Runway 4R/22L 700 feet southeast of Runway 4/22 is estimated to cost $10 million. These runway improvements are anticipated post 2000. Environmental assessments have not yet been started for these projects.



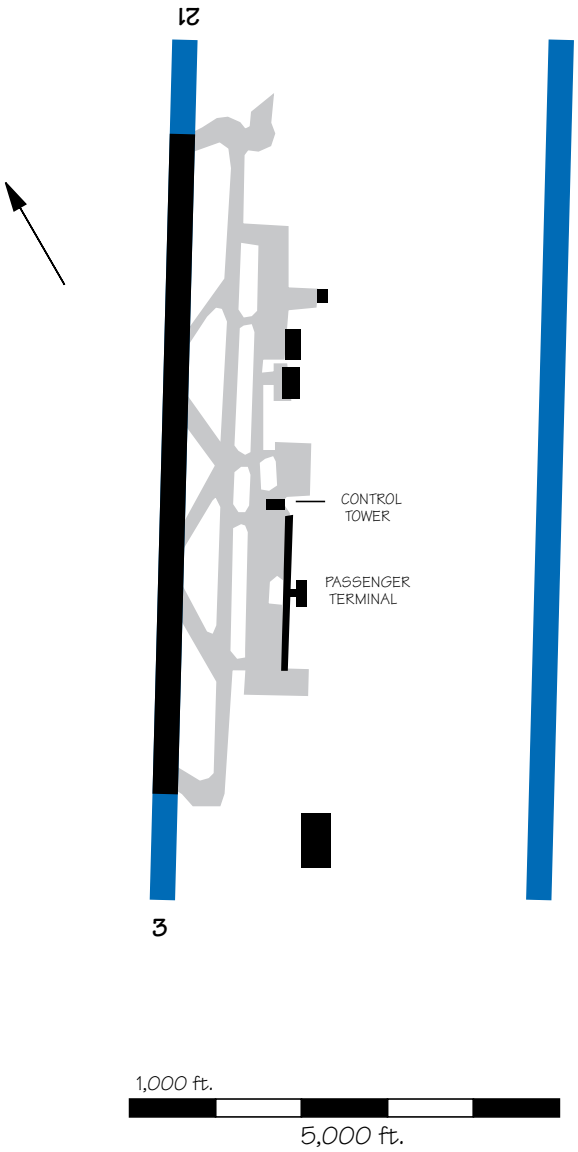
Greensboro Piedmont Triad Int'l Airport (GSO)

An extension of Runway 14/32 is planned. It is expected to be operational by 1998, at a cost of $15.7 million. Construction of a new parallel Runway 5L/23R 5,300 feet north of Runway 5/23 is also being planned.



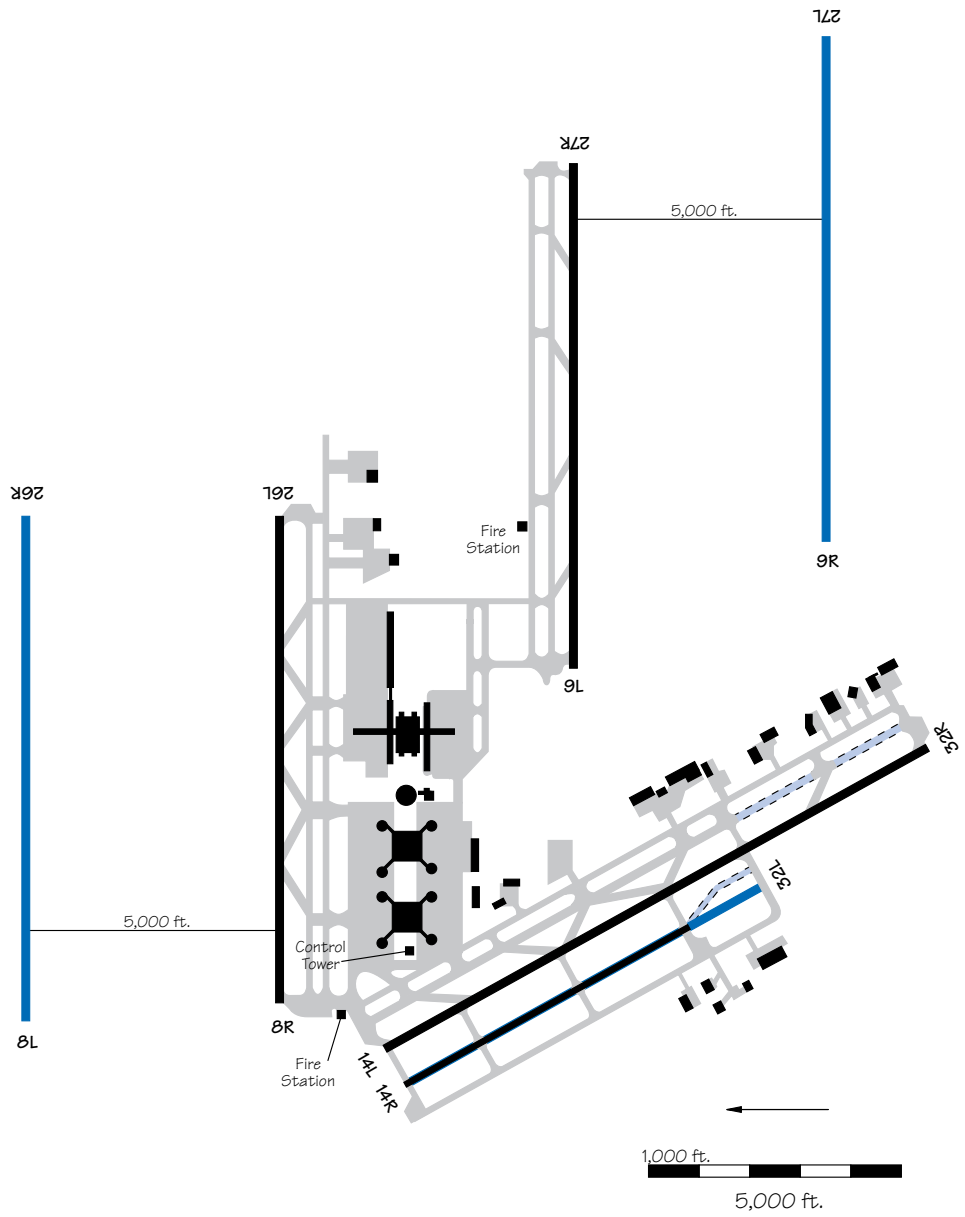
Greer Greenville-Spartanburg Airport (GSP)

A new parallel runway, Runway 3R/21L, is anticipated in 2015 at an estimated cost of $50 million. Presently, its planned length is 10,000 feet with a 4,300 foot separation from Runway 3/21. This would potentially double hourly IFR arrival capacity from 29 to 57. Also, an extension of Runway 3L/21R to 10,000 feet is planned. Construction is expected to be completed in 1999 at a cost of $34.1 million.



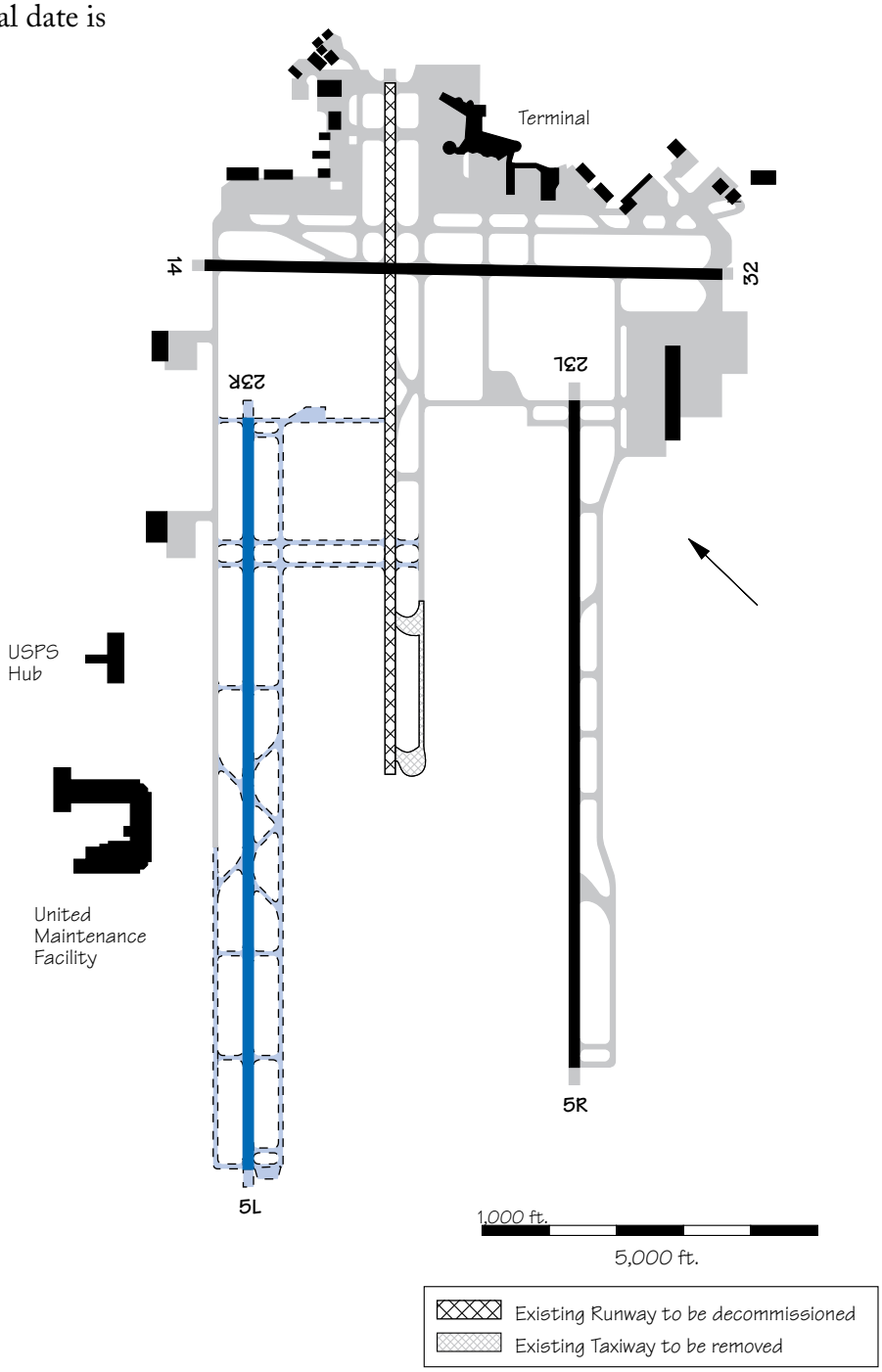
Houston Intercontinental Airport (IAH)

An $8 million 2,000-foot extension to Runway 14R/32L is planned to be operational in 1997. Construction is expected to begin in 1996. A new Runway 8L/26R is planned to be completed in 1999. Construction should begin in 1997 and is estimated to cost $44 million. This runway will be parallel to and north of the existing Runway 8/26. Runway 8L/26R, in conjunction with Runways 9/27 and 8/26, has the potential to support triple IFR approaches, if approved. Another new runway, parallel to and south of Runway 9/27 is also planned. Construction is expected to cost $44 million.



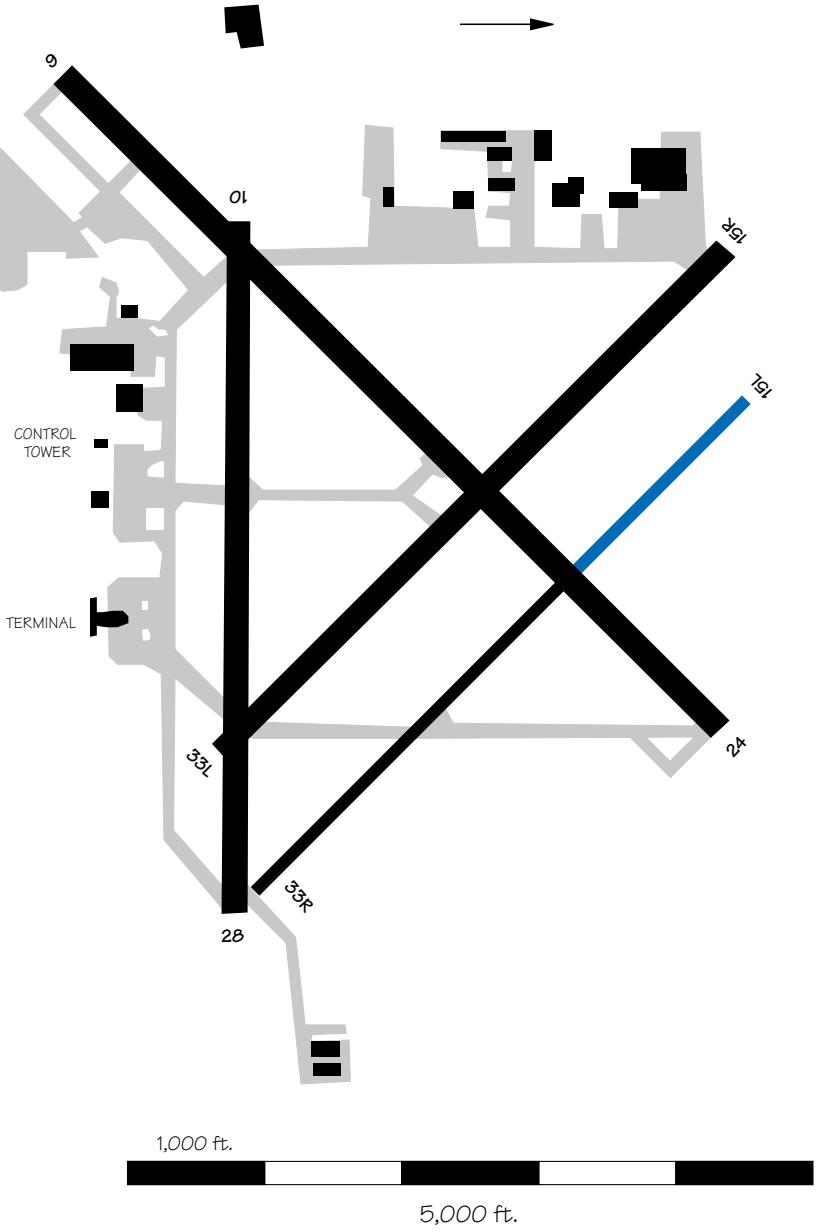
Indianapolis Int'l Airport (IND)

Construction of a replacement for Runway 5L/23R 4,800 feet northwest of Runway 5R/23L began on January 22, 1993, and is scheduled to be completed in 1995. The estimated total project cost is $37.5 million, and the estimated operational date is December 1995.



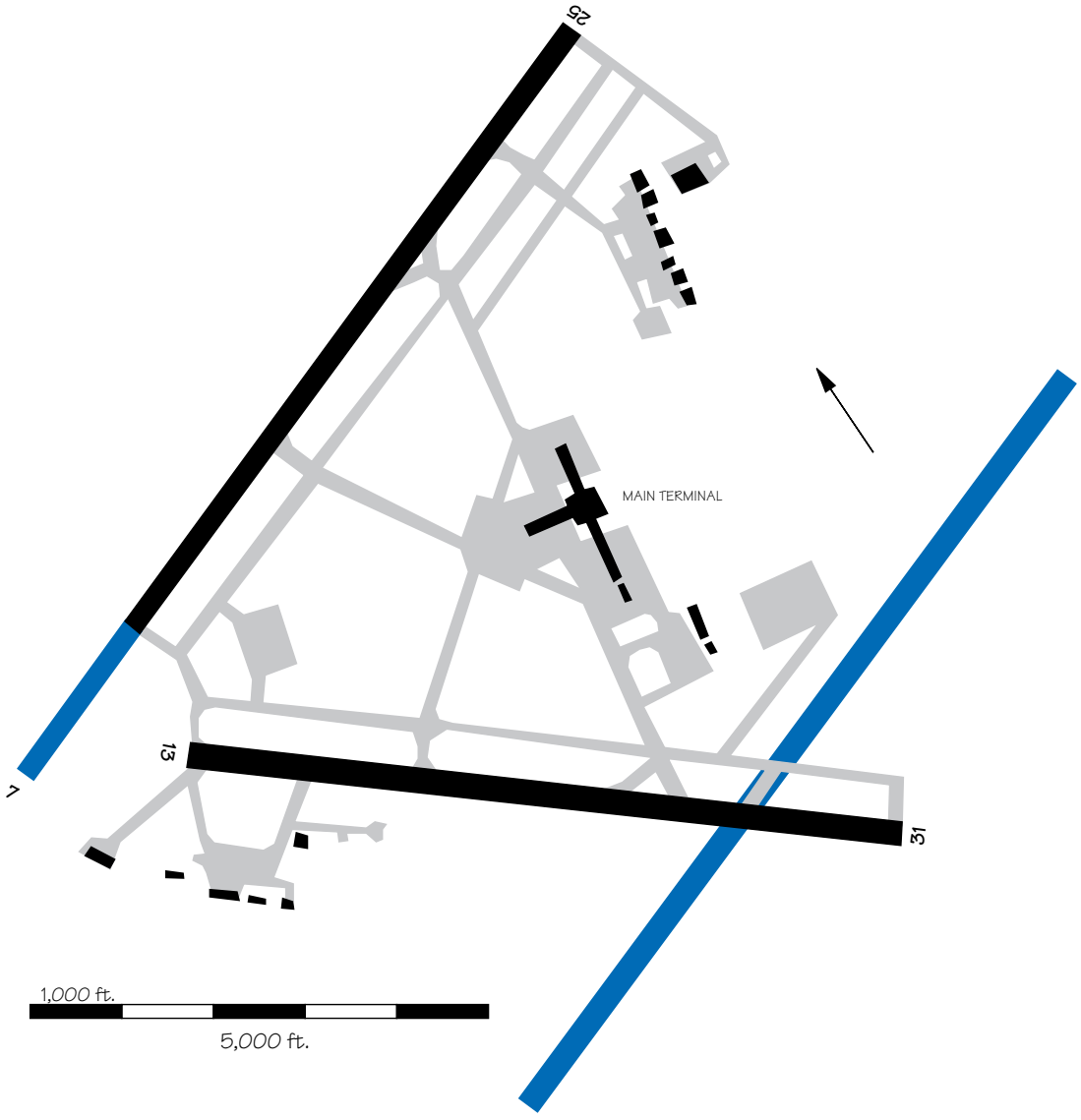
Islip Long Island Mac Arthur Airport (ISP)

An extension of Runway 15R/33L is planned for 2000. The estimated cost of construction is $26 million.



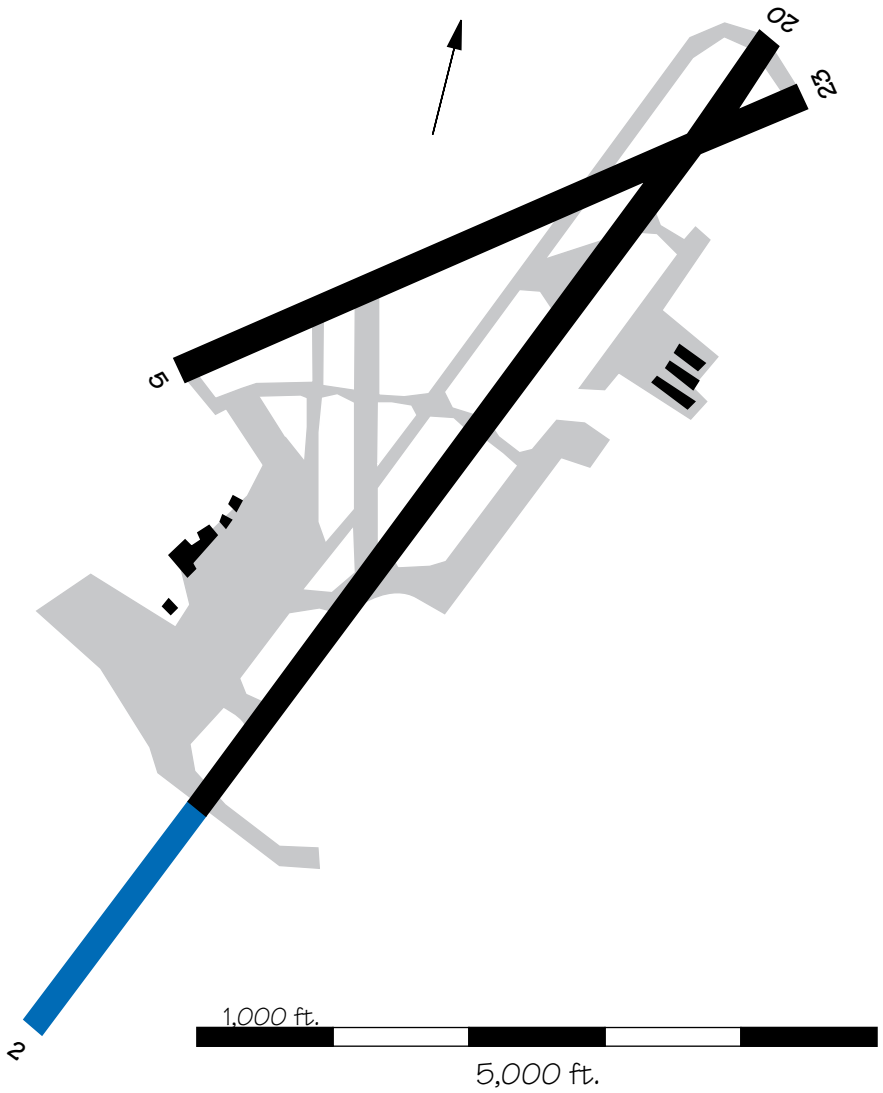
Jacksonville Int'l Airport (JAX)

Construction began March 20, 1993 of an extension to Runway 7/25, with an expected operational date of September 1994. The estimated project cost is $19 million. A new parallel Runway 7R/25L is also being planned. It will be 6,500 feet south of the existing Runway 7/25, permitting independent parallel IFR operations and potentially doubling Jacksonville's hourly IFR arrival capacity. Construction is scheduled to begin in 1999, with completion expected in 2000. Estimated cost of construction is $37 million.



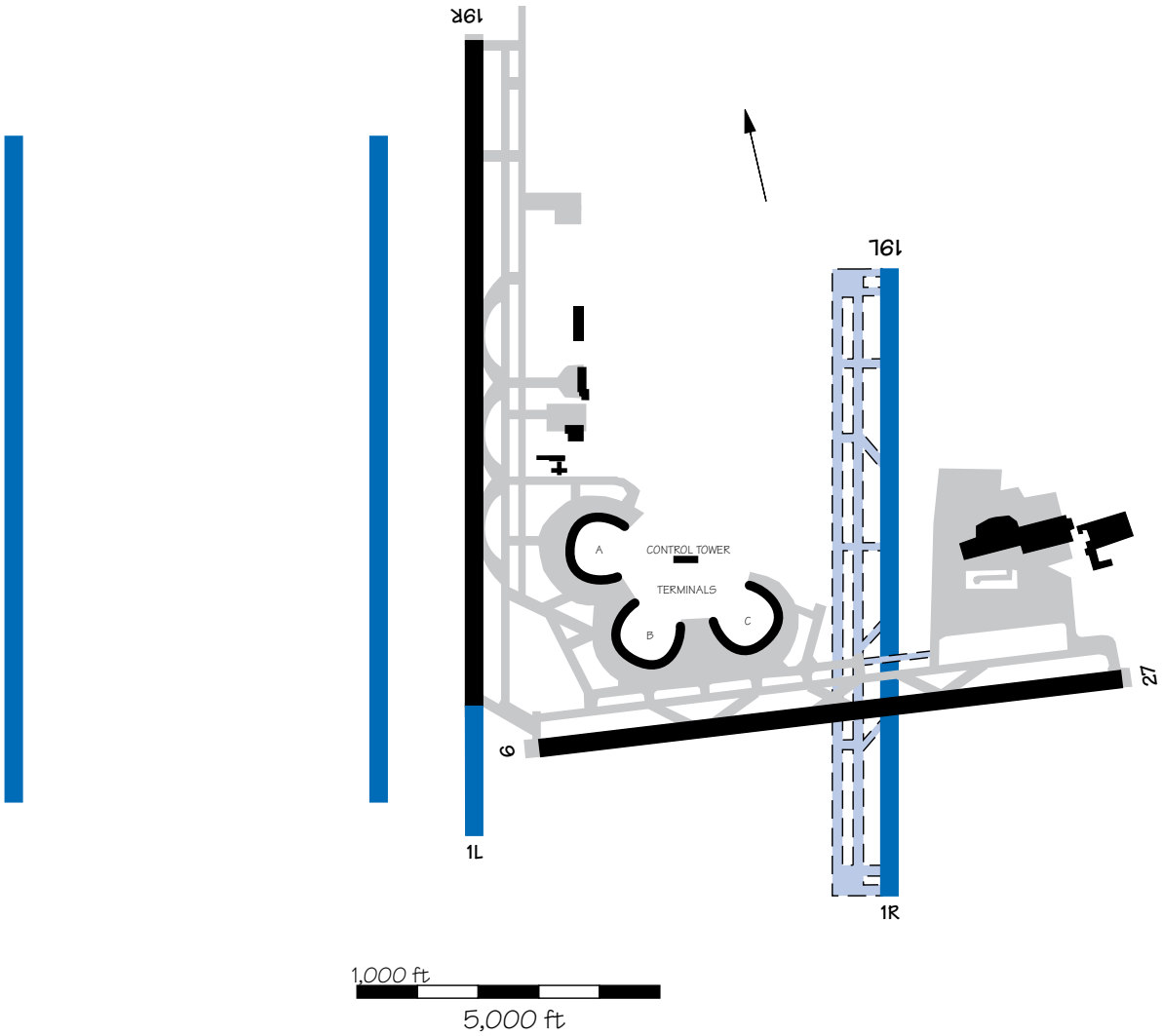
Kahului Airport (OGG)

An extension of Runway 2/20 is being planned.



Kansas City Int'l Airport (MCI)

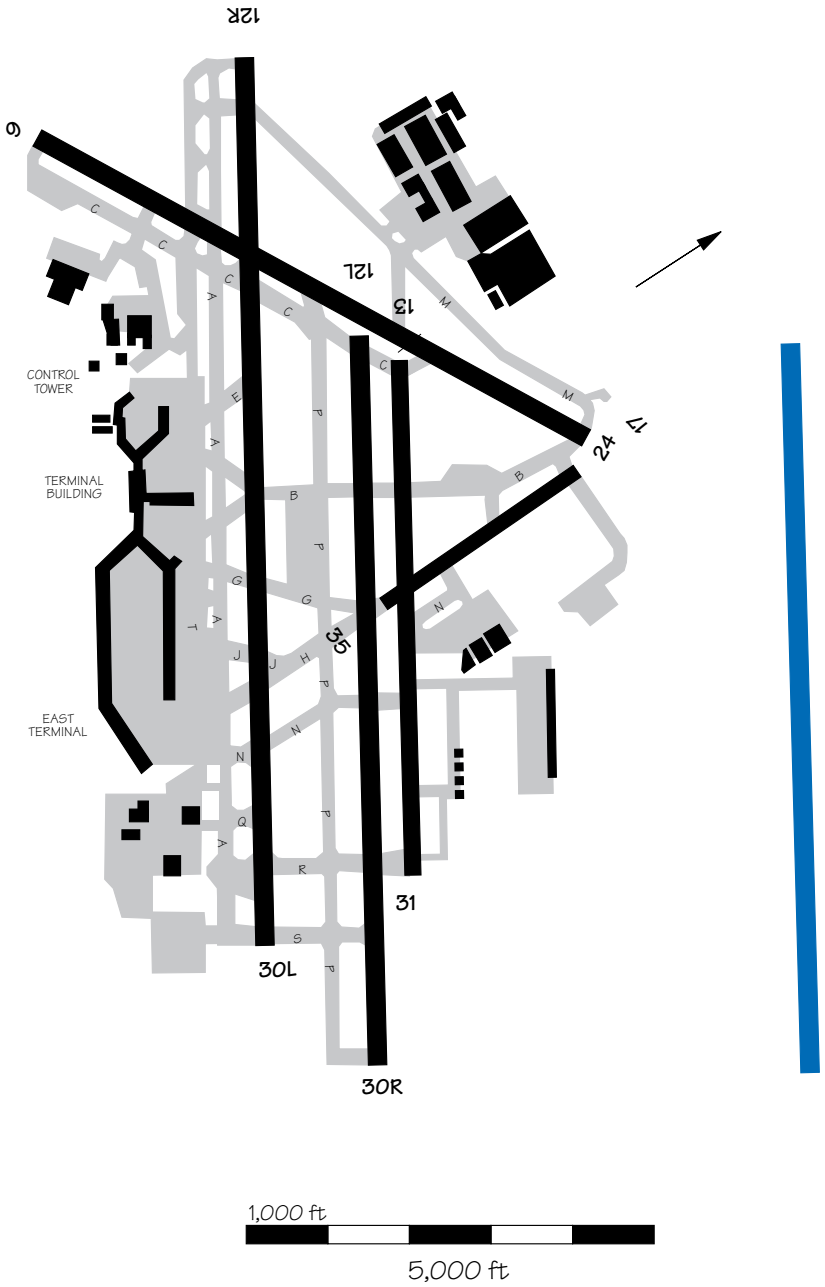
Construction began on the new north-south parallel Runway 1R/19L in October 1989. It it located 6,575 feet east of the existing Runway 1L/19R and will permit independent IFR operations. The runway should be operational in November 1994. The estimated cost of construction is $45.2 million. In the Airport Master Plan currently underway an extension of Runway 1L/19R and additional parallel runways west of the existing north-south runway are being considered.



Lambert St. Louis Int'l Airport (STL)

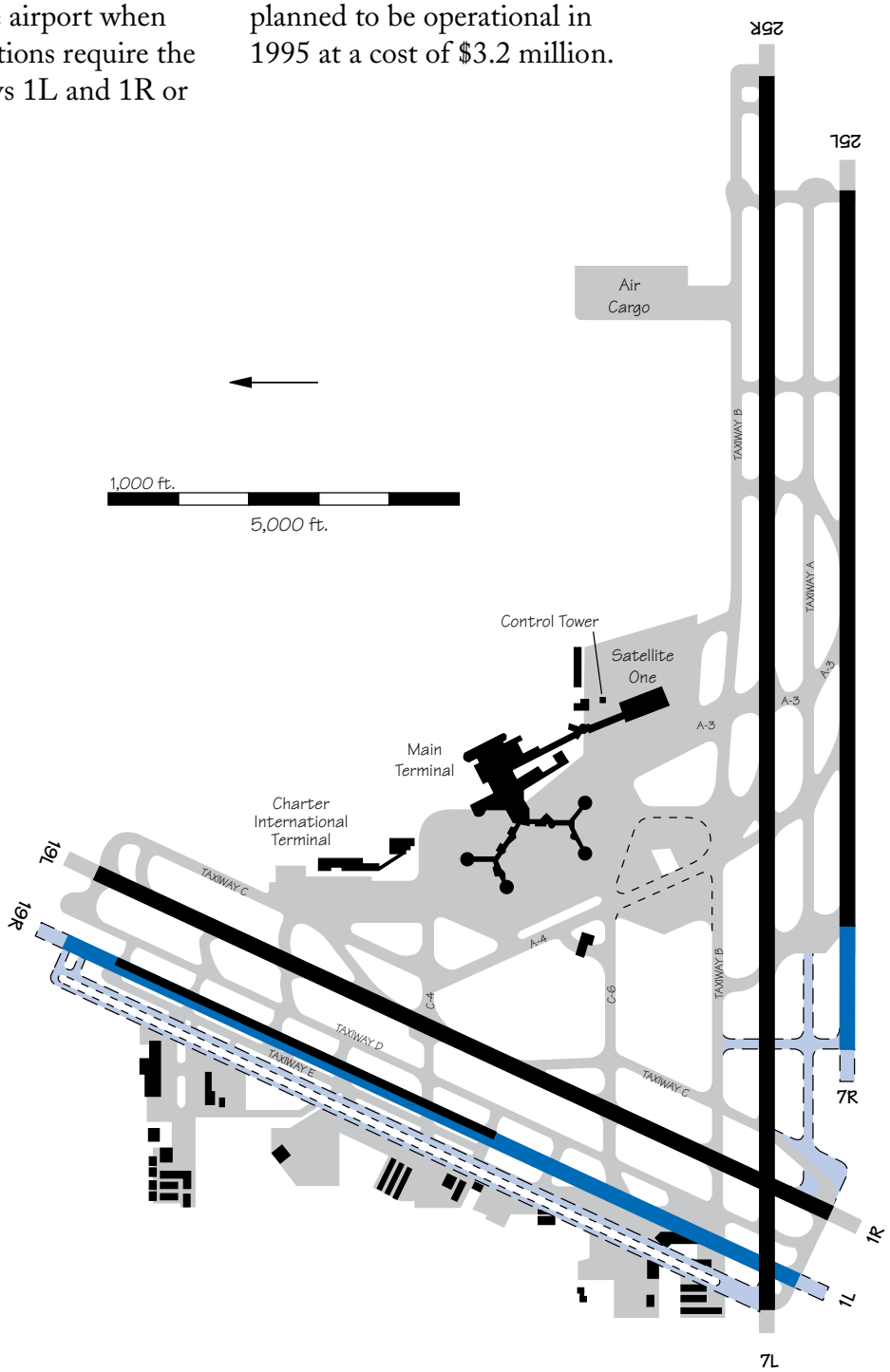
A new parallel Runway 12L/30R in several configurations had been recommended by the St. Louis Airport Capacity Design Team. A Master Plan Update is underway, and the entire airport layout may change as a result. The new plan will probably call for three parallel runways, with at least two supporting independent IFR operations. An EIS is also underway. The Master Plan Update and the EIS are anticipated to be completed by December 1995.

A new Runway 14R/32L is planned as the first phase of the airport expansion. Construction of the runway could occur beginning in 1996, subject to environmental approval.



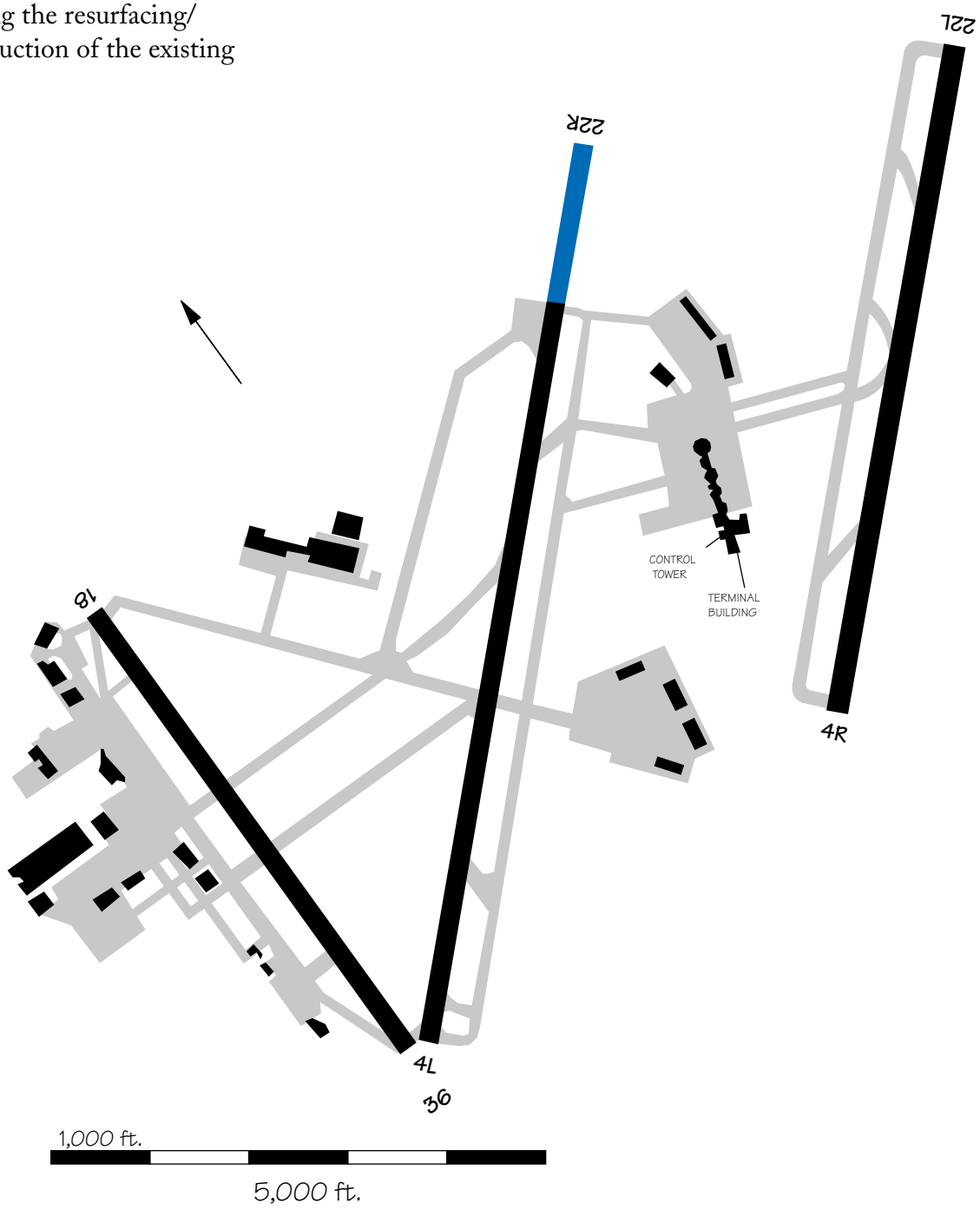
Las Vegas McCarran Int'l Airport (LAS)

An upgrade of Runway 1L/19R to accommodate air carrier aircraft is being planned for 1997. This improvement will significantly increase the capacity of the airport when weather conditions require the use of Runways 1L and 1R or 19L and 19R. An extension of Runway 7L/25R has been completed, at a cost of $17.5 million. An extension of Runway 7R/25L is also planned to be operational in 1995 at a cost of $3.2 million.



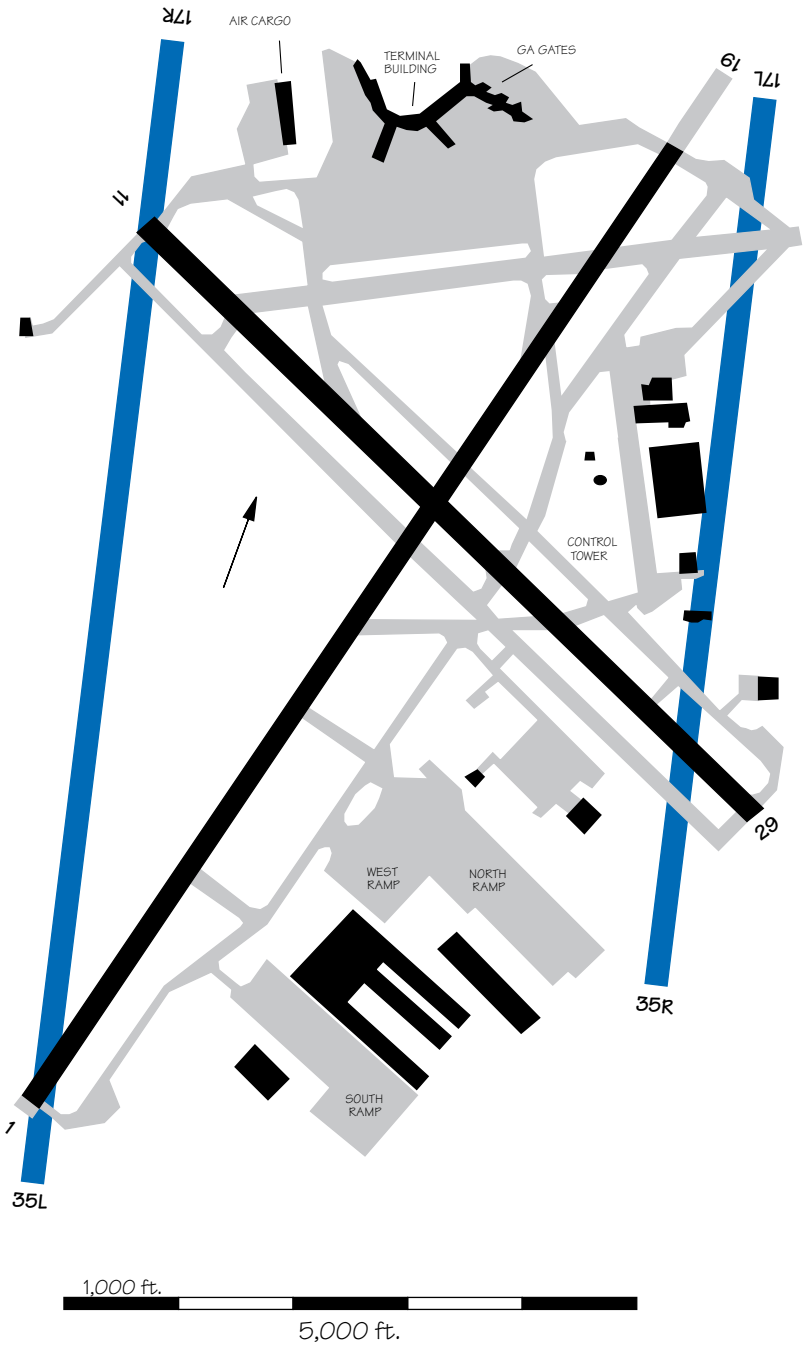
Little Rock Adams Field (LIT)

An extension to Runway 4L/22R is scheduled to begin construction in 1994 and should be operational in 1996. The estimated cost of construction is $30 million, including the resurfacing/ reconstruction of the existing runway.



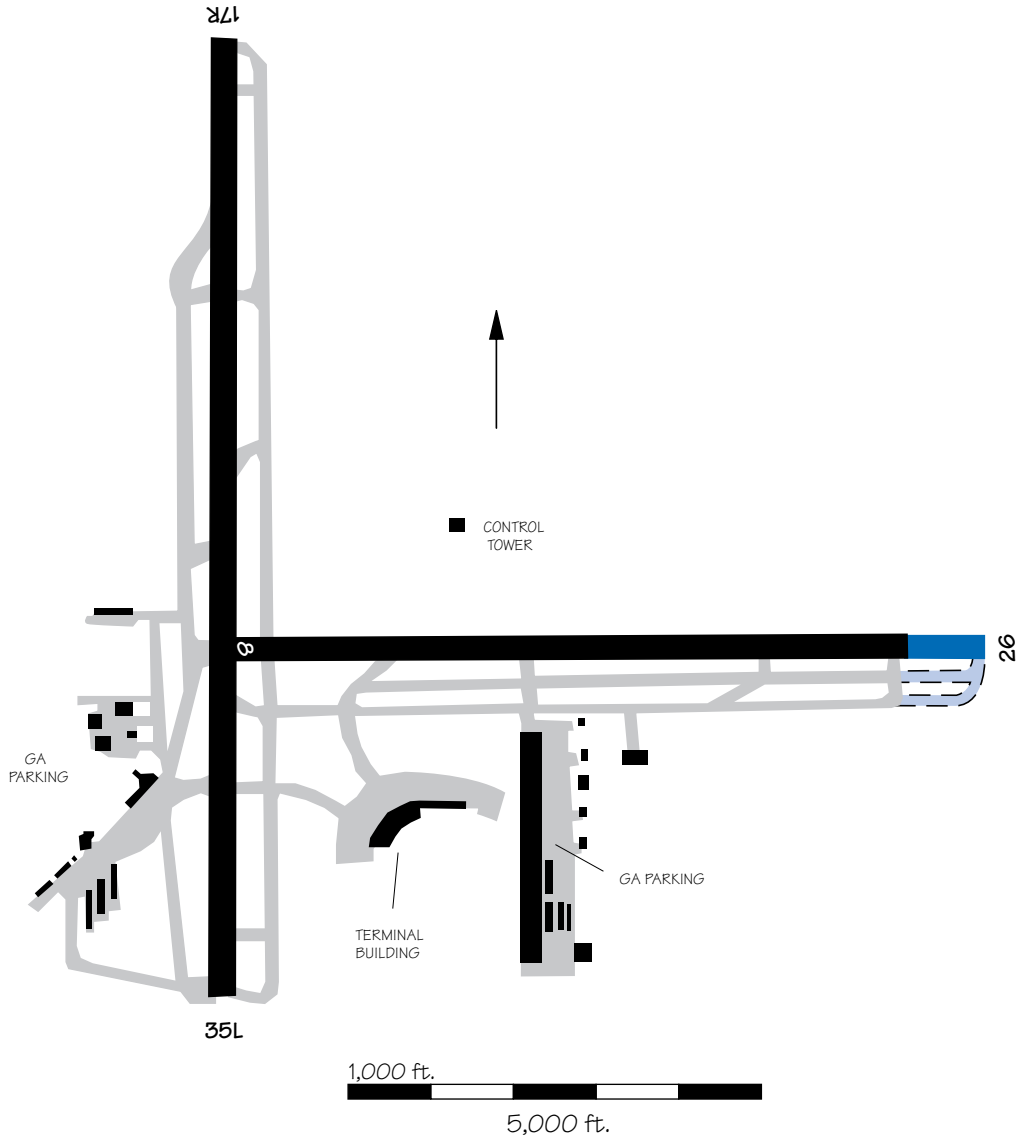
Louisville Standiford Field (SDF)

Construction is underway for two new parallel runways, 4,950 feet apart. They will be numbered Runways 17R/35L and 17L/35R and will be 10,000 and 7,800 feet long, respectively. They will replace Runway 1/19, which will be closed. The estimated cost of construction is $51 million for Runway 17R/35L and $42 million for 17L/35R. Runway 17L/35R is expected to be completed in 1995, and Runway 17R/35L is expected to be completed in 1997. The two runways will permit independent parallel IFR operations and increase hourly IFR arrival capacity from 29 to 57.



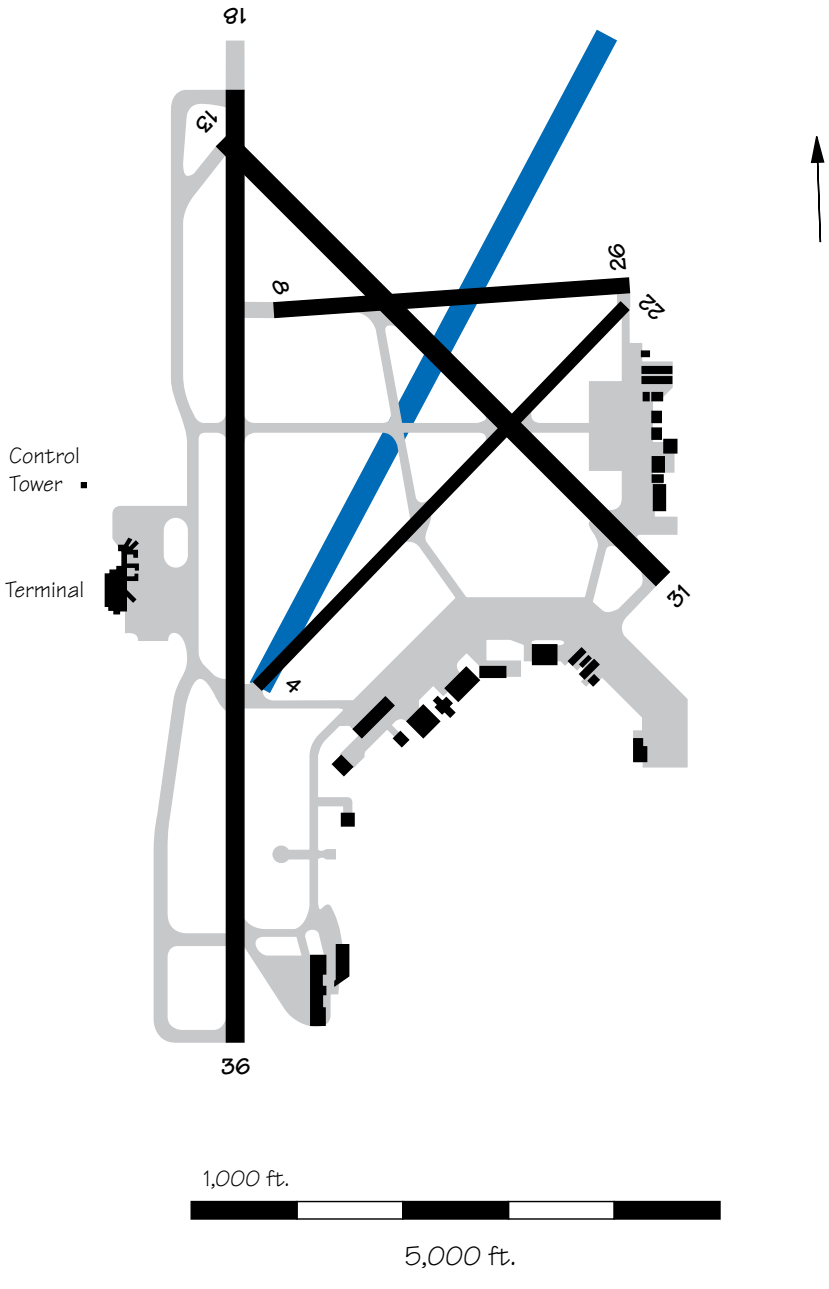
Lubbock Int'l Airport (LBB)

An extension to Runway 8/26 is planned. The start of construction is scheduled for 2000 and the estimated cost is $3.8 million. It is anticipated that the extension will be operational in 2000.



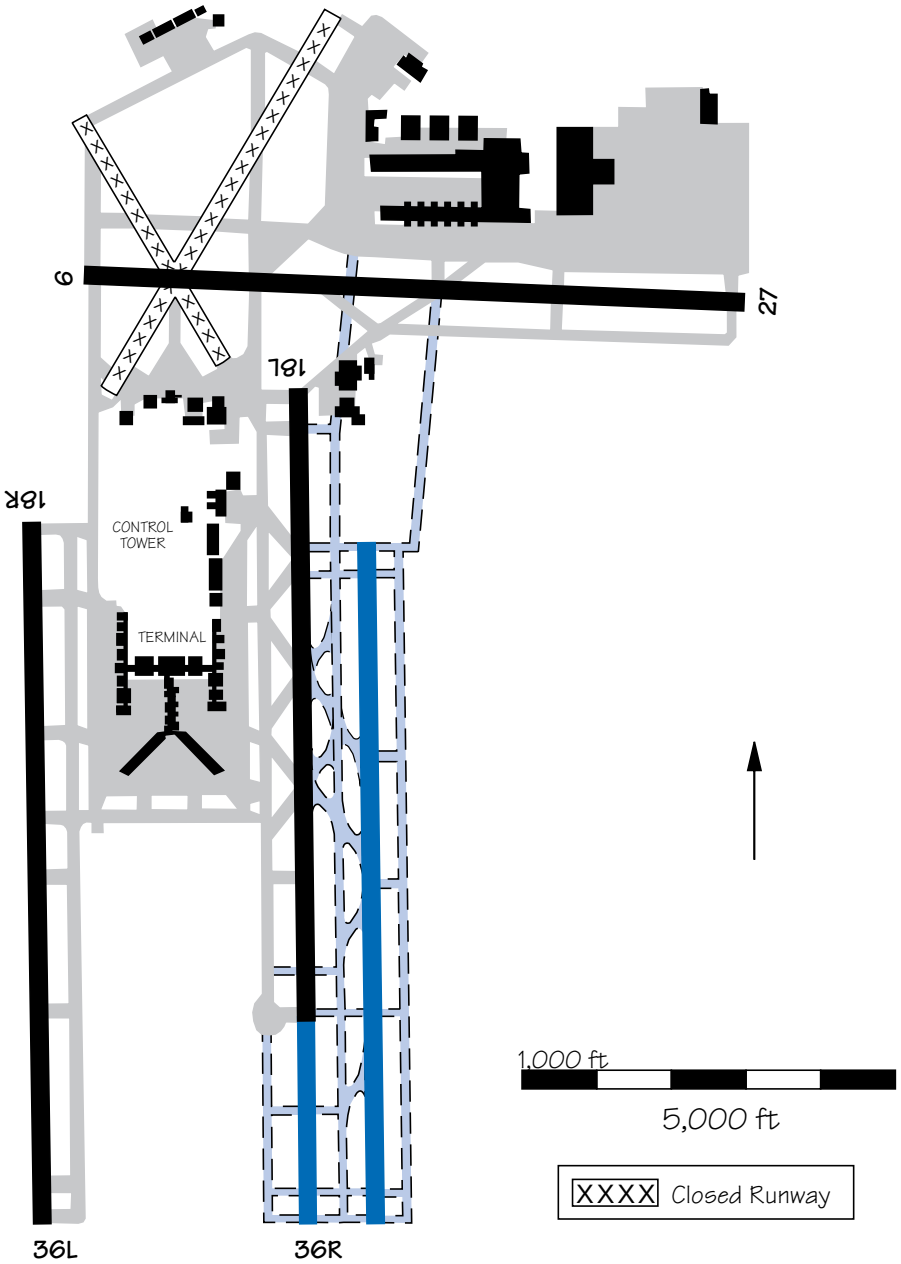
Madison/Dane County Regional Airport (MSN)

A new runway, Runway 3/21, is proposed to be built to provide additional operational capabilities to direct flights away from noise sensitive areas. This will be necessary when Runway 18/36 reaches its limit to run operations in reverse flow for noise abatement purposes during peak operating hours. Runway 3/21 would replace Runway 4/22. It is not feasible to extend 4/22 to have the same operational capabilities desired of Runway 3/21. The estimated cost of construction is $15 million. An EIS is underway.



Memphis Int'l Airport (MEM)

Construction of a new north-south parallel Runway 18E/36E began in 1993. It will be located about 900 feet east of Runway 18L/36R and 4,300 feet from Runway 18R/36L, thus allowing independent parallel approaches. This will increase present hourly IFR arrival capacity by about 33 percent. The new runway should be operational in 1997. The estimated cost is $88.8 million. An extension of Runway 18L/36R is also planned. Construction is expected to start in 1997 and be completed by 1999 at a cost of $58 million.

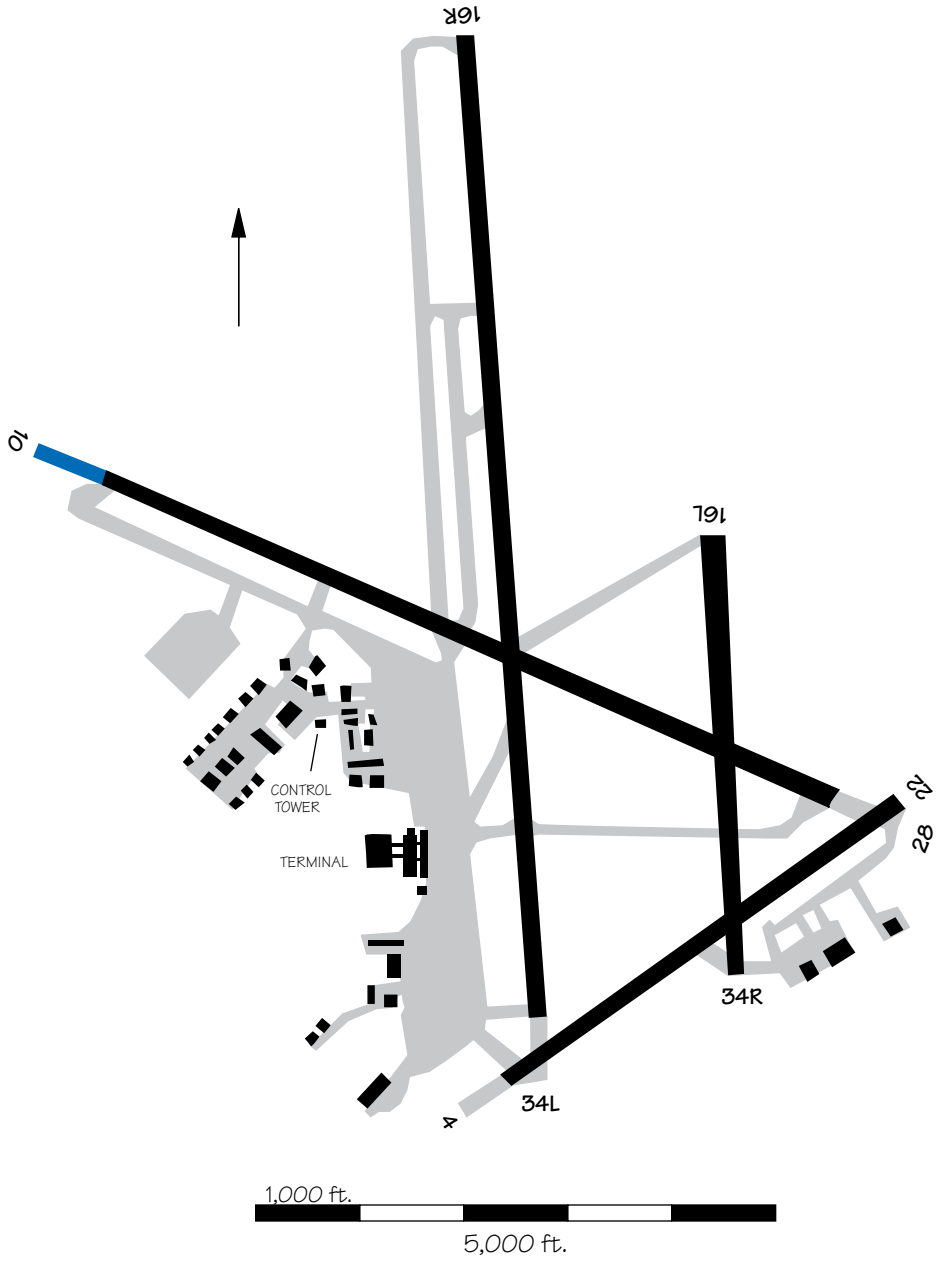


Miami Int'l Airport (MIA)

Construction of a new air carrier runway 8,600 feet long and 800 feet north of existing Runway 9L/27R is expected to start in 1997 and be completed by late 1999. The estimated cost of construction is $170 million.

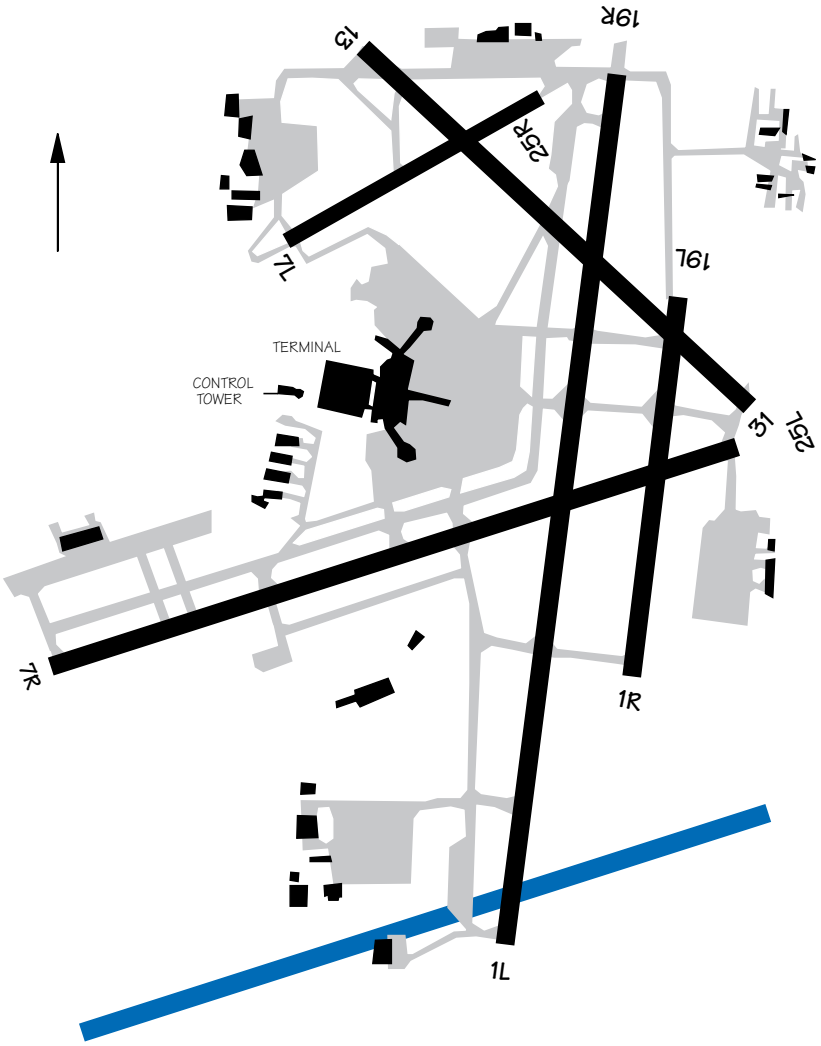
Midland Int'l Airport (MAF)

An extension to Runway 10/28 is planned, and construction is scheduled to begin in 2005.



Milwaukee General Mitchell Int'l Airport (MKE)

Construction of a new parallel Runway 7R/25L 3,500 feet south of the existing runway is expected to start in 1999 and be completed in 2003. The estimated cost of construction is $150 million.

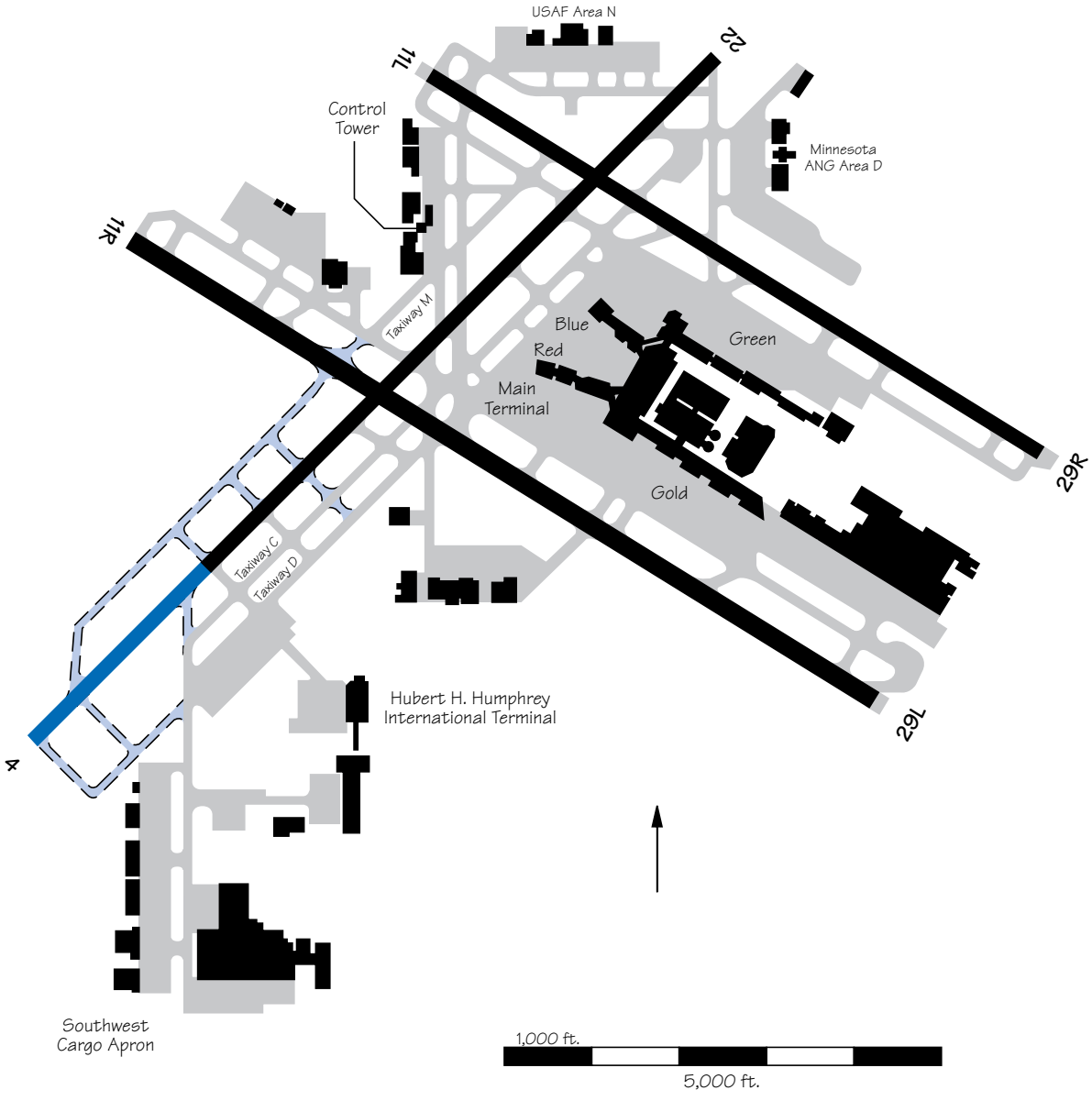


1,000 ft.

5,000 ft.

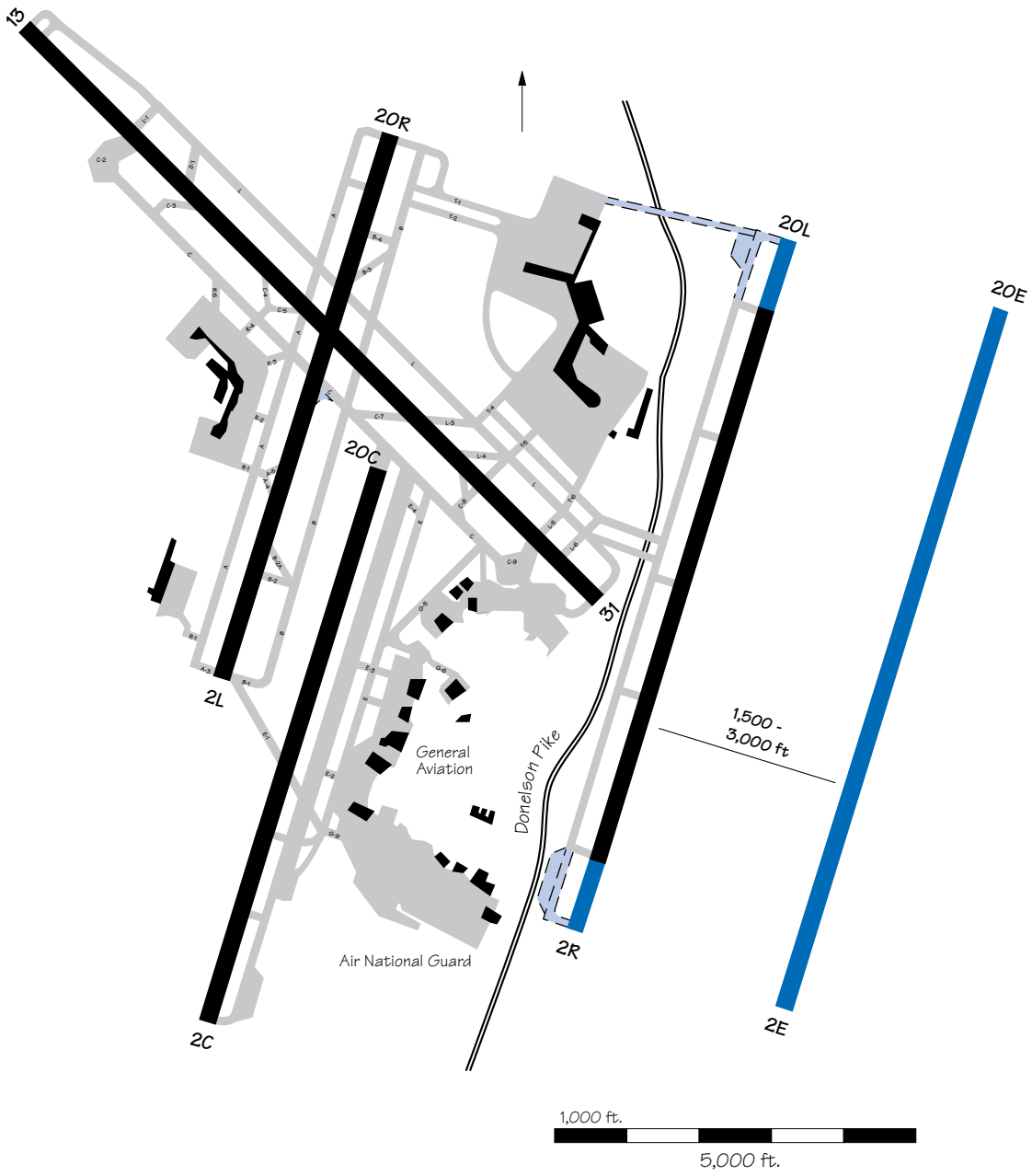
Minneapolis-St. Paul Int'l Airport (MSP)

An extension of Runway 4/22 2,750 feet to the southwest is proposed, which would bring the runway length to 11,000 feet. Construction is scheduled to begin in late 1994, and the extension should be operational in late 1995. The estimated cost of construction is $12.5 million. Associated taxiway improvements will cost an additional $14.5 million and noise mitigation for the runway extension will cost $29.4 million. Taxiway improvements are expected to be completed by late 1996.



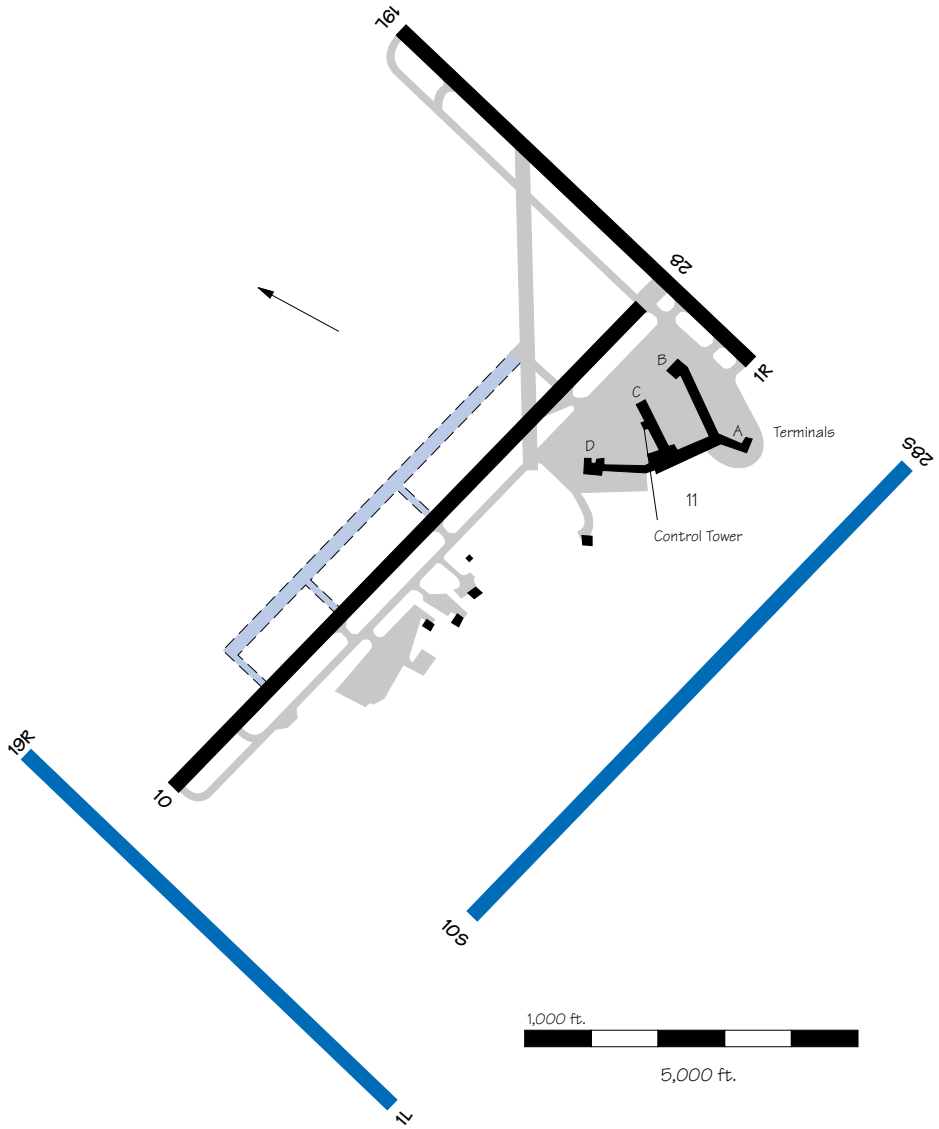
Nashville Int'l Airport (BNA)

The relocation and extension of Runway 2C/20C has been completed and is operational A new Runway 2E/20E is planned for the future between 1,500 and 3,500 feet from Runway 2R/20L. In addition, an extension to Runway 2R/20L is planned. It is expected to be completed by 2000, at an estimated cost of $38.6 million.



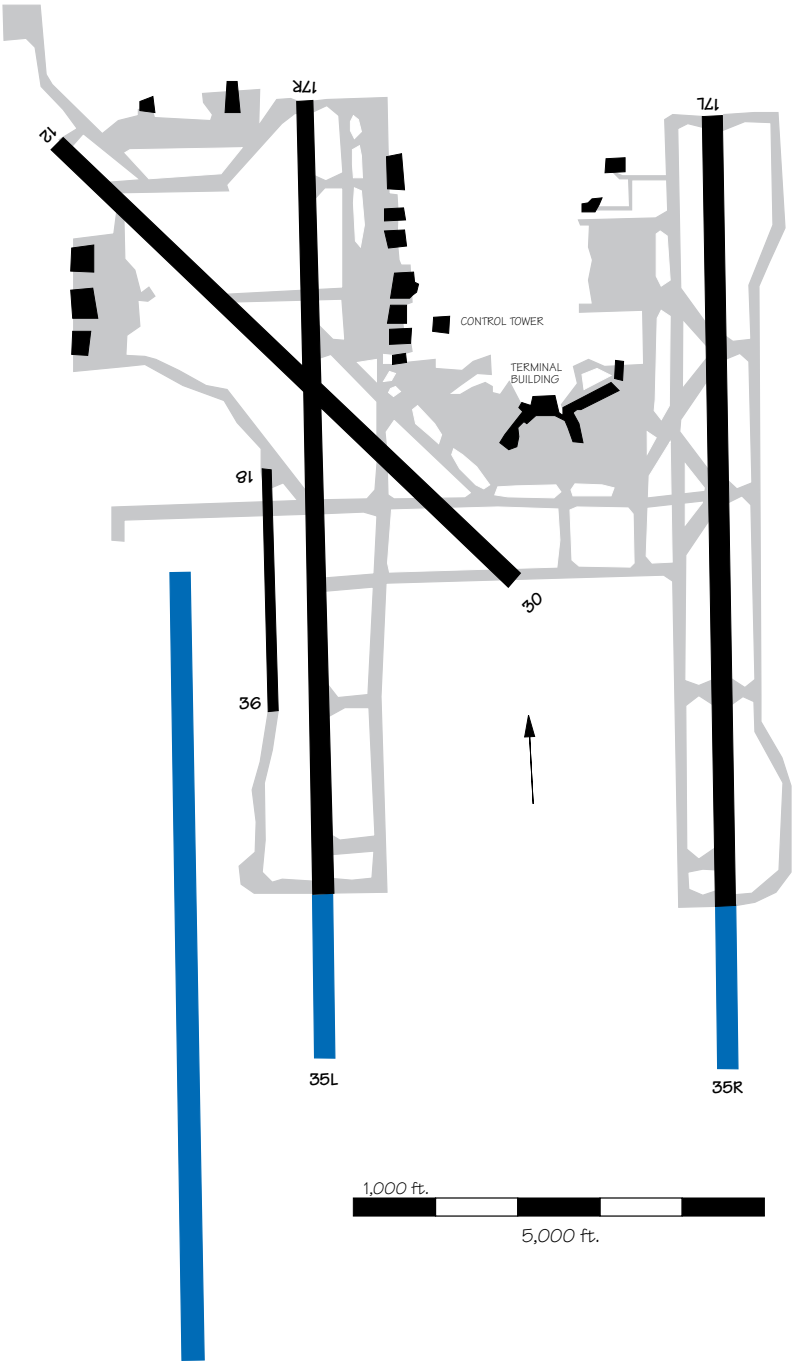
New Orleans Int'l Airport (MSY)

A new north-south runway, Runway 1L/19R, is planned. This new runway will be parallel to the existing Runway 1/19 and will be located west of the threshold of Runway 10, approximately 11,000 feet away from Runway 1/19. This will allow independent parallel operations, doubling IFR hourly arrival capacity. Pending environmental approvals, construction could begin as early as January 1996 and be completed in 2000, at an approximate cost of $340 million. As an alternative to this north-south runway, the airport is considering the construction of an east/west parallel runway, Runway 10S/28S, 4,300 feet to the south of existing Runway 10/28, off of present airport property. The estimated cost of construction is $460 million. The airport is also planning to construct a north parallel east/west taxiway approximately 800 feet north of and parallel to the existing Runway 10/28, which could later be converted into a 6,000-foot commuter and general aviation runway. The site preparation phase of the taxiway construction has already begun. The estimated cost of construction is $25.5 million, and the expected operational date is 1995.



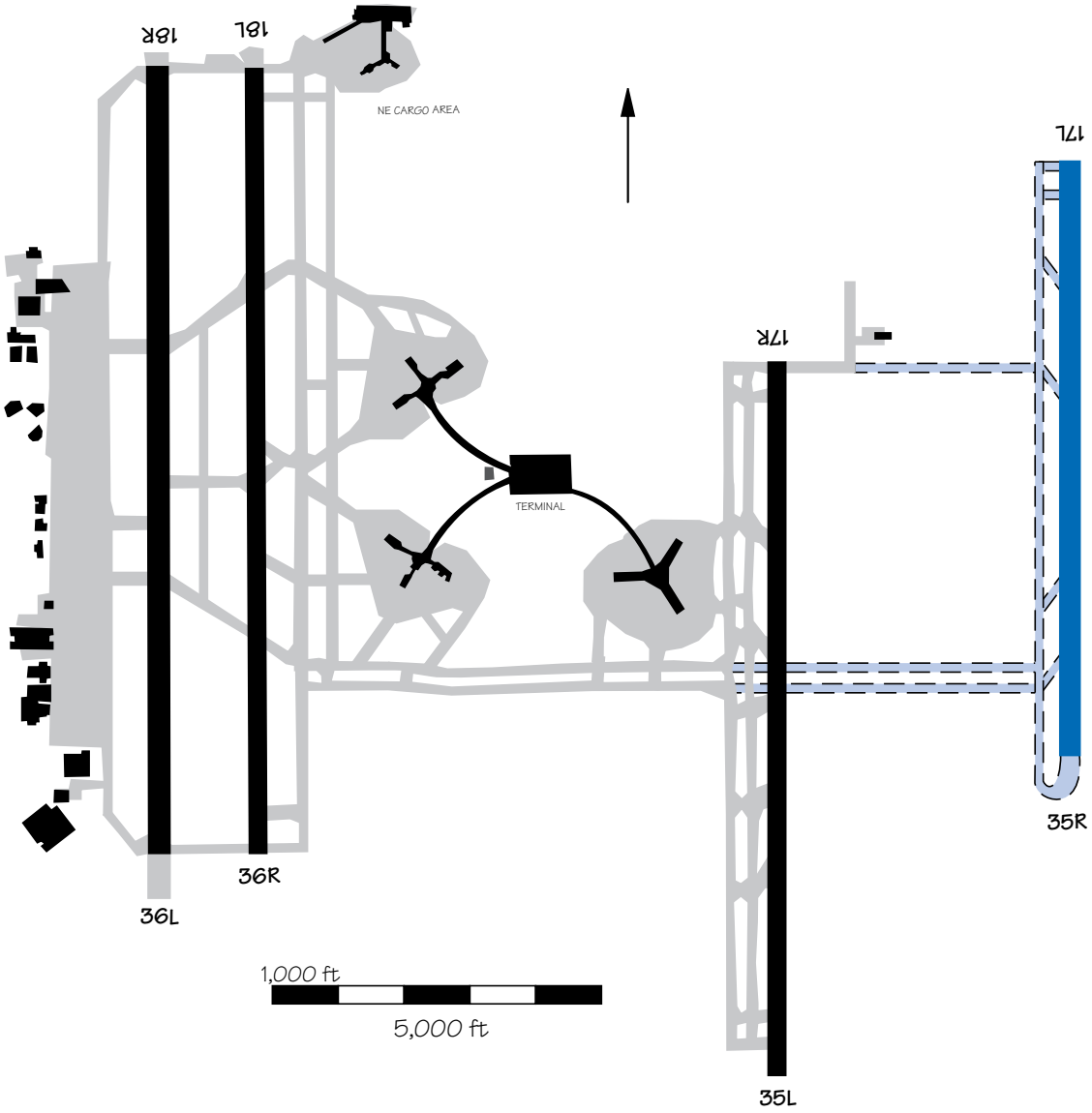
Oklahoma City Will Rogers World Airport (OKC)

Construction of a new west parallel runway 1,600 feet west of of Runway 17R/35L is planned to be operational by 2004. Estimated cost of construction is $13 million. Extensions to both north/south runways, Runways 17L/35R and 17R/35L are also planned. The estimated costs of extending 17L/35R is $8 million. Construction of the extension to Runway 17R/35L is expected to start in 2001 and be operational by 2014, at an estimated cost of $8 million.



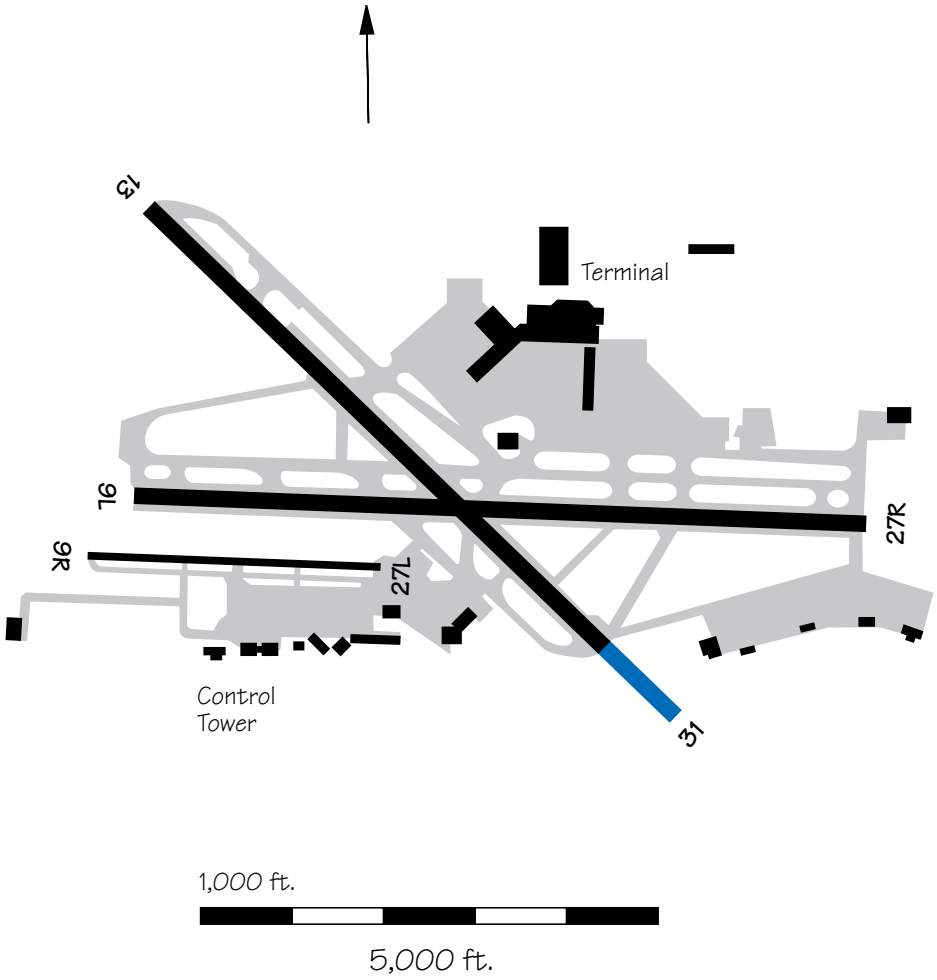
Orlando Int'l Airport (MCO)

Construction of a fourth north-south runway, Runway 17L/35R, began October 10, 1990. The runway is expected to be operational in 2000. It will be located 4,300 feet east of Runway 17R/35L. This may permit triple independent IFR operations. The estimated cost of construction of this runway is $115 million.



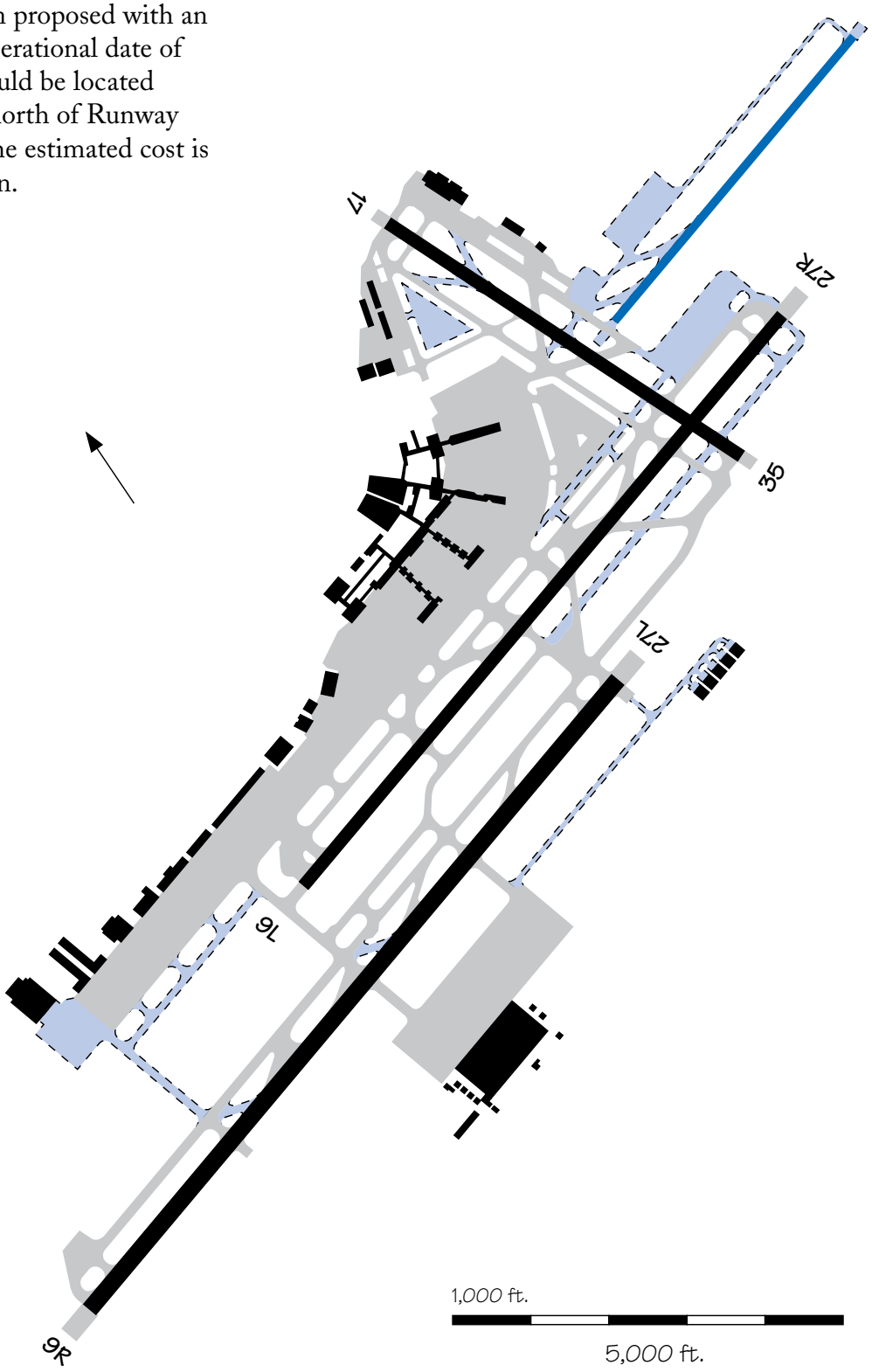
Palm Beach Int'l Airport (PBI)

Runway 9L/27R will be extended 1,200 feet to the west and 811 feet to the east, for a total length of 10,000 feet. Construction is not expected to start until 1995 or later. The total estimated project cost is $4.8 million. In addition, an extension of Runway 13/31 is planned to be completed in 1999 at a cost of $1 million. A 700 foot extension of Runway 9R/27L is also being considered for completion in 1999 or later at a cost of $0.5 million.



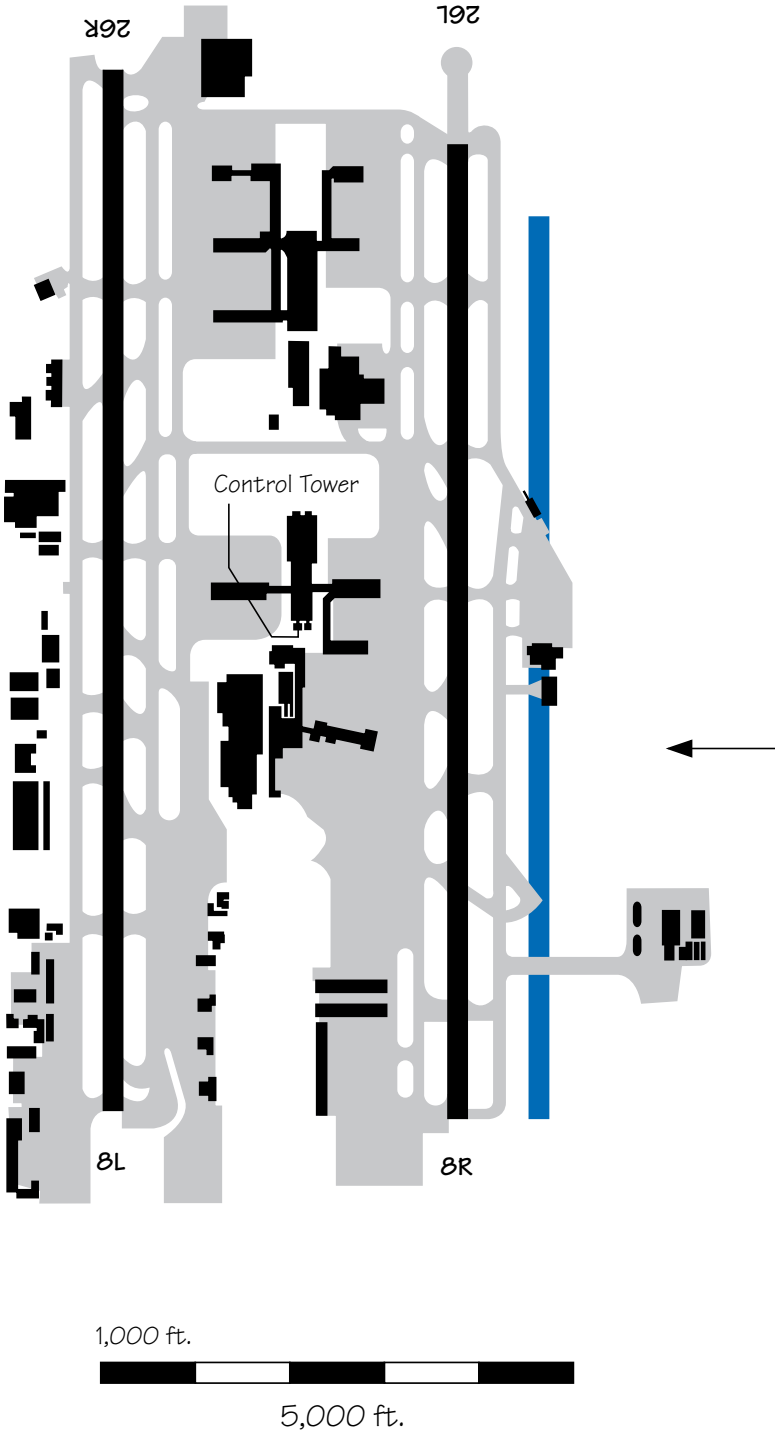
Philadelphia Int'l Airport (PHL)

A new 5,000-foot parallel commuter runway, Runway 8/26, has been proposed with an expected operational date of 1997. It would be located 3,000 feet north of Runway 9R/27L. The estimated cost is $215 million.



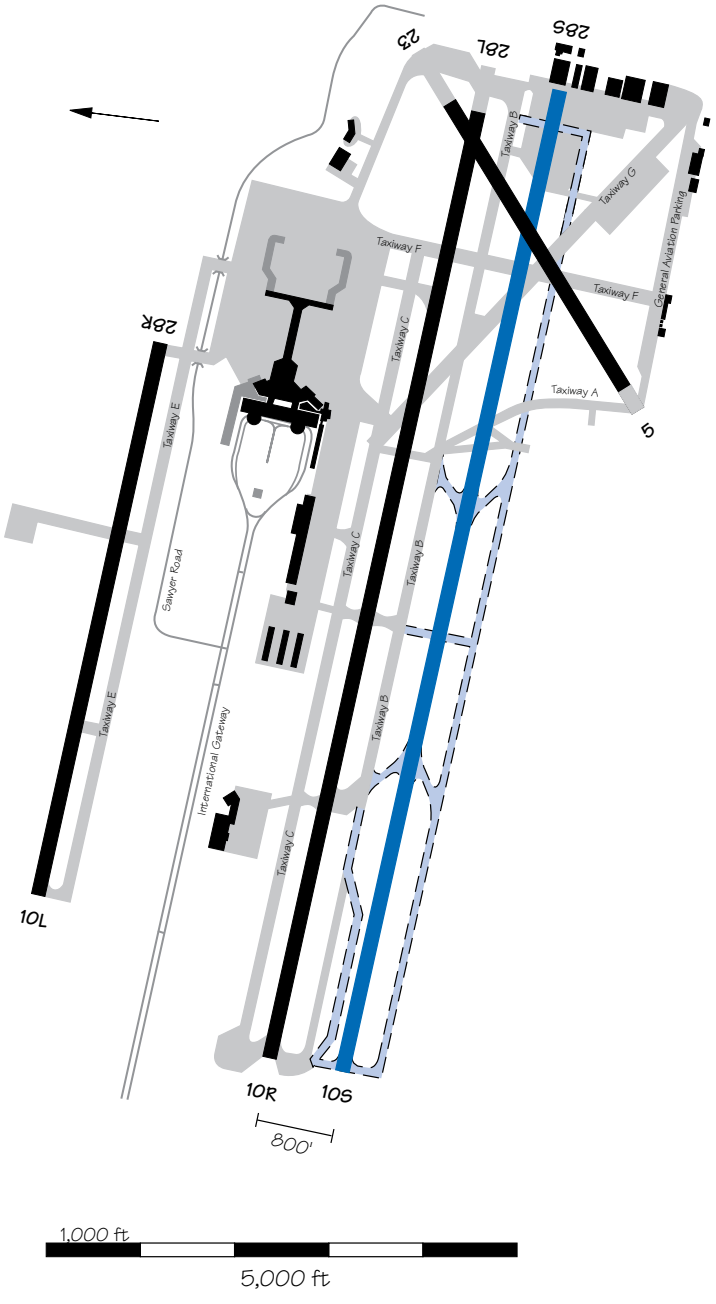
Phoenix Sky Harbor Int'l Airport (PHX)

A new 9,500-foot third parallel runway, Runway 7/25, is proposed 800 feet south of Runway 8R/26L. The estimated cost of construction is $88 million. The estimated operational date for the first 7,800 feet of Runway 7/25 is 1996; the remaining 1,700 feet of the runway is not scheduled at this time. In addition, an extension of Runway 8L/26R is under consideration. The estimated cost of construction is $7.0.



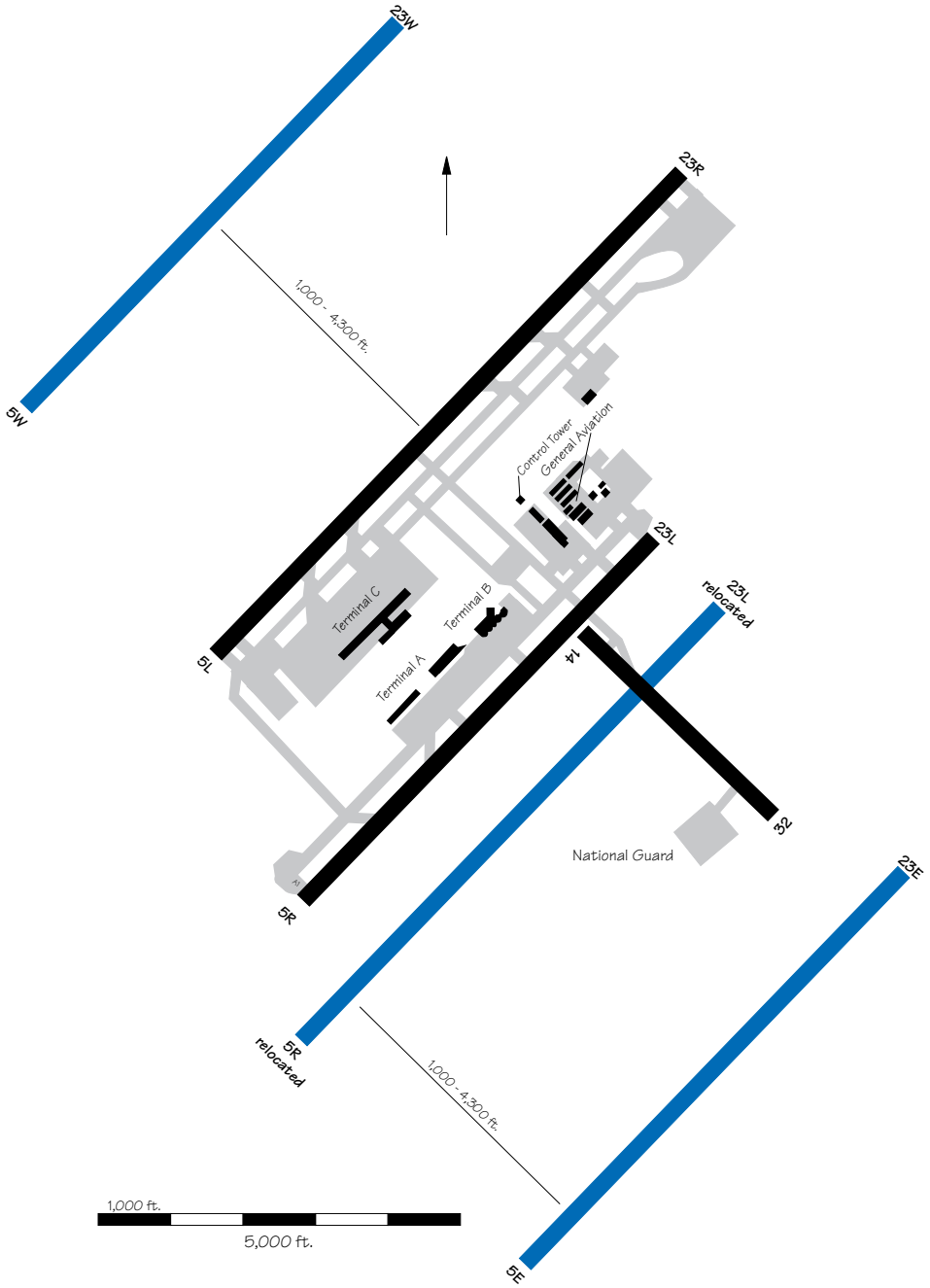
Port Columbus Int'l Airport (CMH)

The Airport Layout Plan has been coordinated to show a third parallel Runway 10S/28S constructed 800 feet south of the existing Runway 10R/28L. This runway will be 10,250 feet long and 150 feet wide, with two high speed exits, a 90 degree exit at the center, and a 90 degree bypass taxiway at each end. This would provide a 3,650 foot separation between the proposed Runway 10S/28S and the existing Runway 10L/28R. With the installation of the Precision Runway Monitor (PRM), the existing Runway 10L/28R and the proposed Runway 10S/28S could be used for arrival air traffic. Runway 10R/28L would be used as the departure runway.



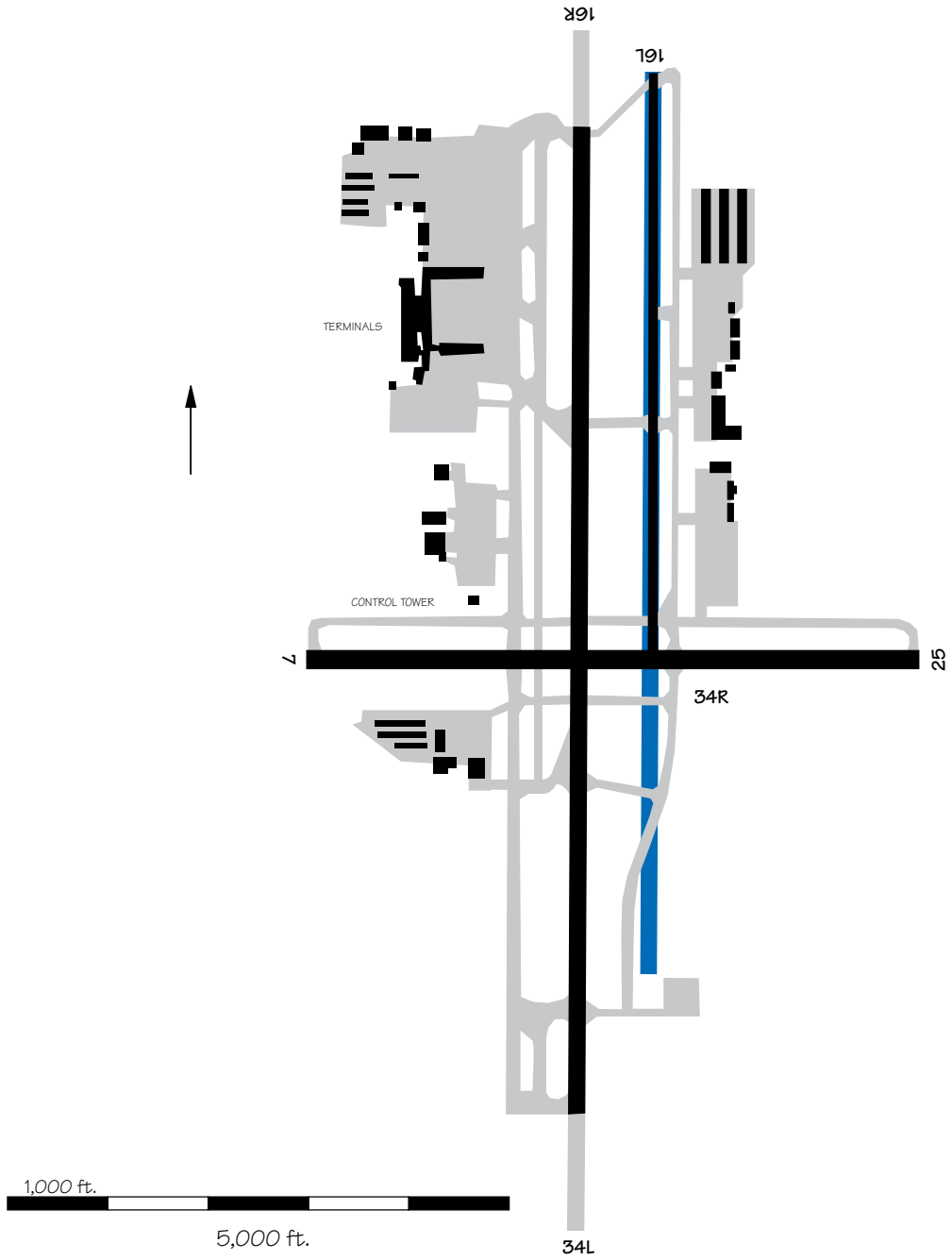
Raleigh-Durham Int'l Airport (RDU)

The relocation of Runway 5R/23L and its associated taxiways is being considered. The new runway will be parallel to and approximately 450-1,200 feet southeast of existing Runway 5R/23L. It will be a 9,000-foot long air carrier runway. Two other runways are proposed for eventual construction. Runway 5W/23W would be located 1,000 to 4,300 feet to the northwest of Runway 5L/23R, and Runway 5E/23E would be located 1,000 to 4,300 feet to the southeast of the relocated Runway 5R/23L. The actual sequence of these developments will be decided after a study by a long-range planning committee.



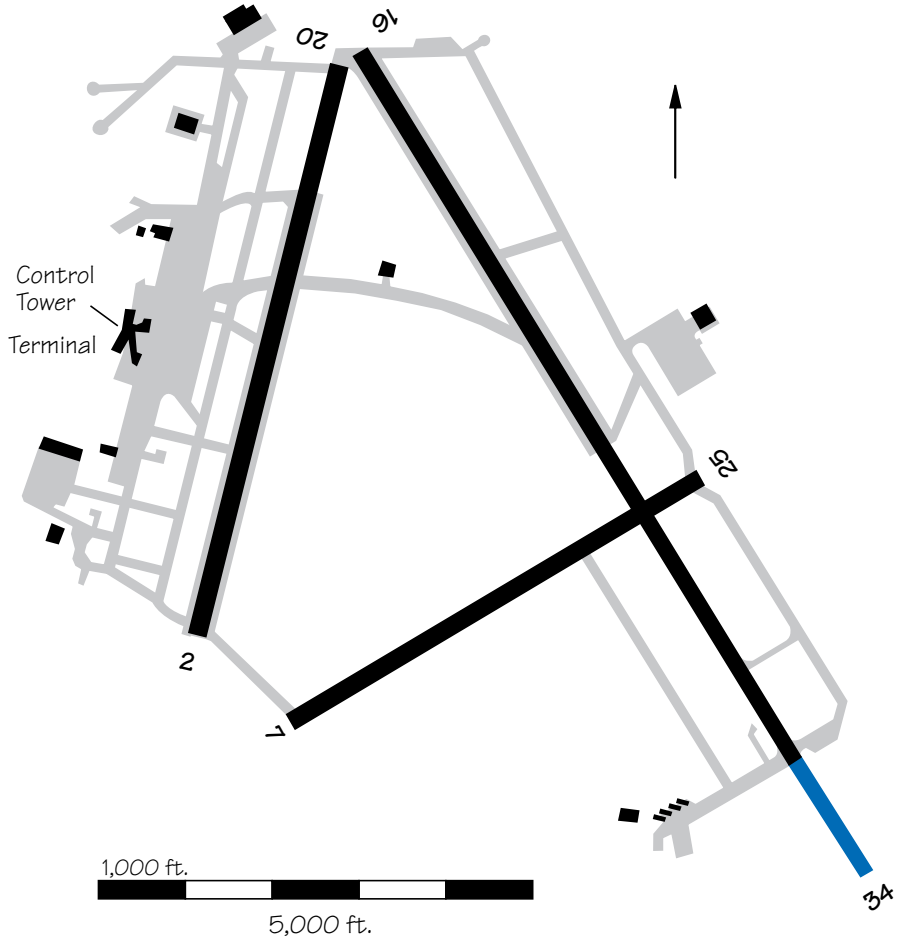
Reno Cannon Int'l Airport (RNO)

Construction began April 23, 1993 to extend and widen Runway 16L/34R. The estimated operational date is the summer of 1994, and the estimated cost of construction is $22 million.



Richmond Int'l Airport (RIC)

An extension of Runway 16/34 is planned for an operational date of January 1997. The estimated cost of construction is $12 million.

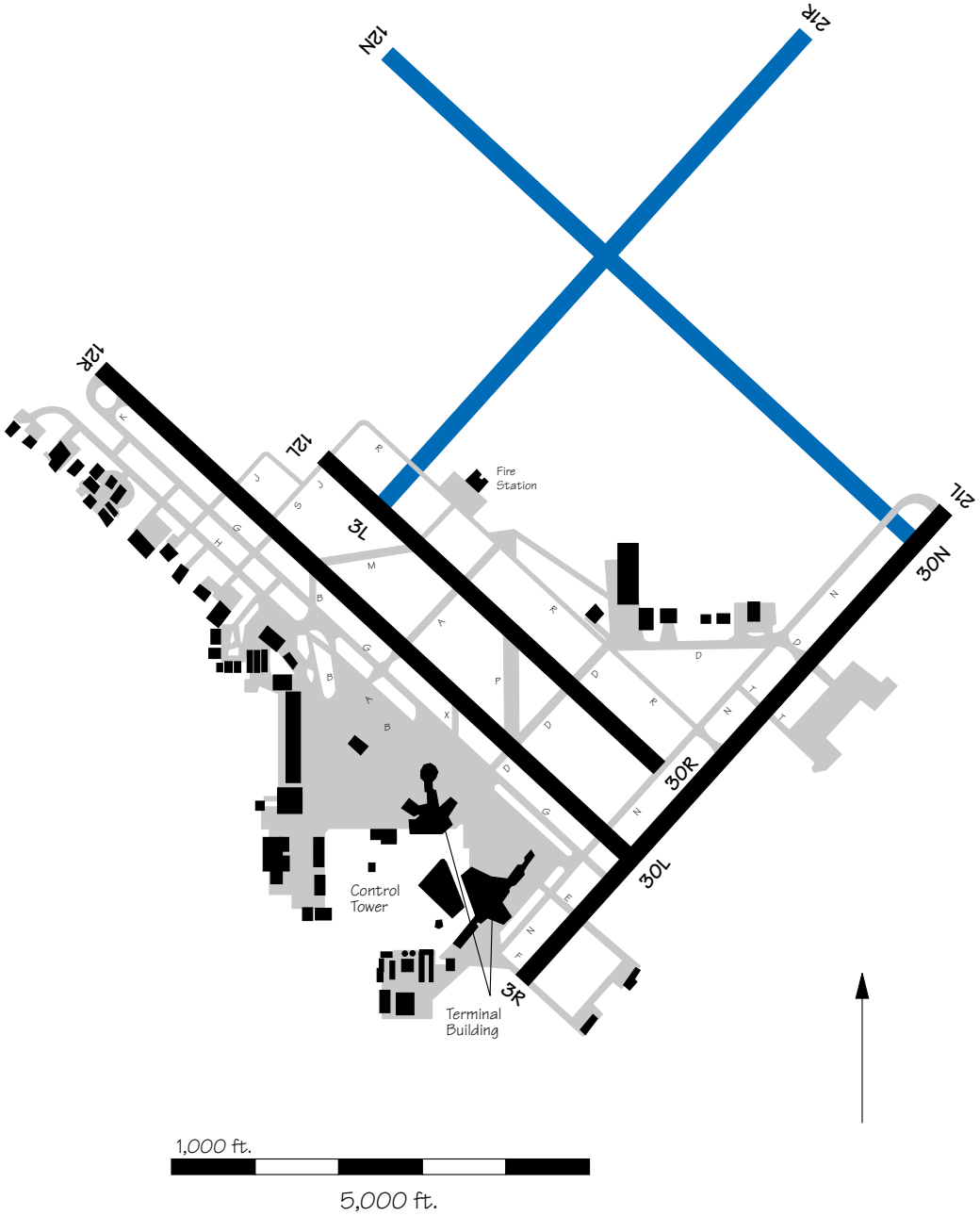


Salt Lake City Int'l Airport (SLC)

Construction of a new 12,000 foot runway parallel to and 6,300 feet west of existing Runway 16R/34L began May 17, 1993. The estimated cost of construction is $120 million. This new runway will permit independent parallel approaches.

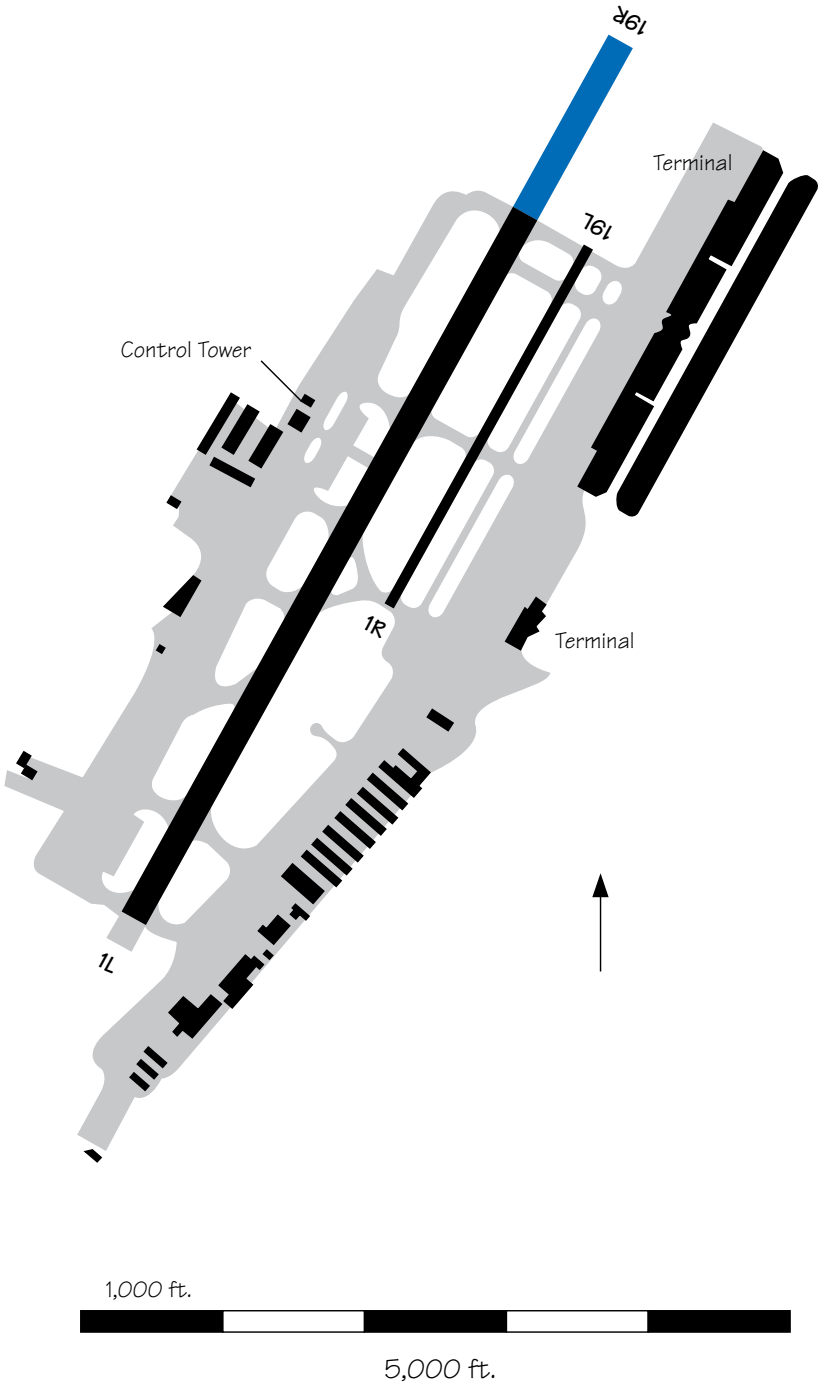
San Antonio Int'l Airport (SAT)

Construction of a new north/south parallel runway is being considered. With a tentative operational date of 2005.



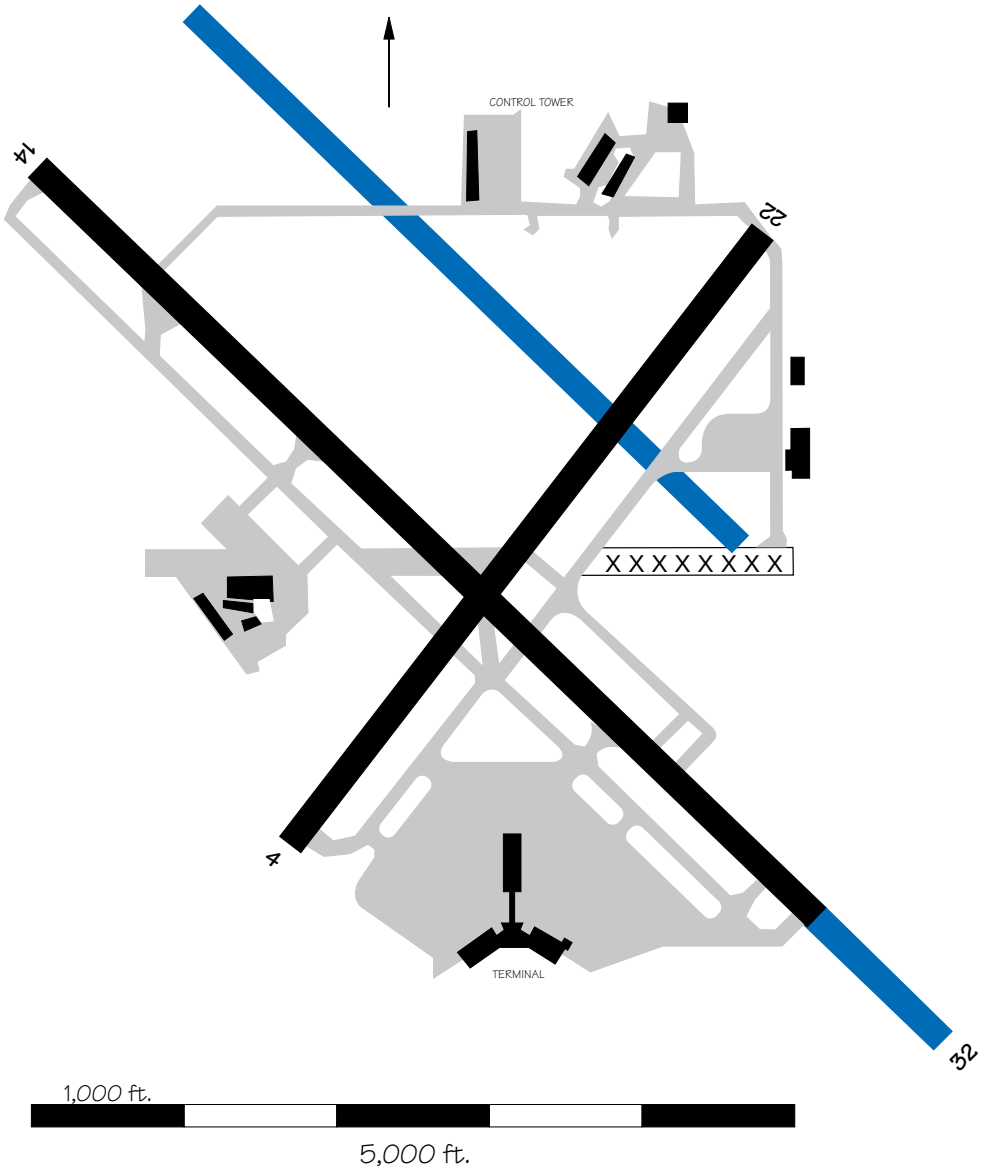
Santa Ana John Wayne Airport - Orange County (SNA)

An extension of Runway 1L/19R is under consideration.



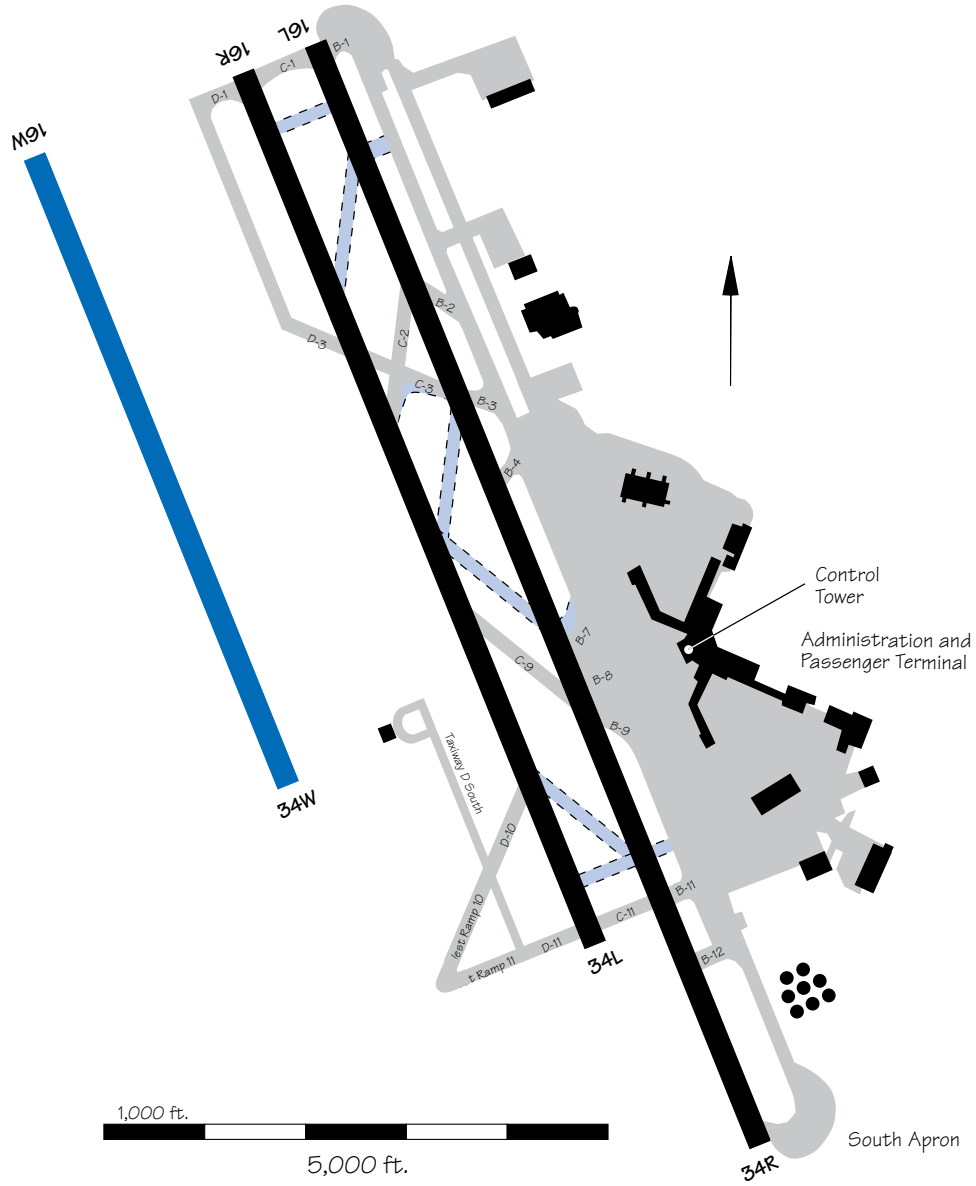
Sarasota Bradenton Airport (SRQ)

A new parallel Runway 14L/32R 1,230 feet northwest of Runway 14/32 is being planned at an estimated cost of $9 million. It is expected to be operational by 1998. In addition, an extension of the existing Runway 14/32 is planned at a cost of $4.3 million. It is expected to be complete in 1996.



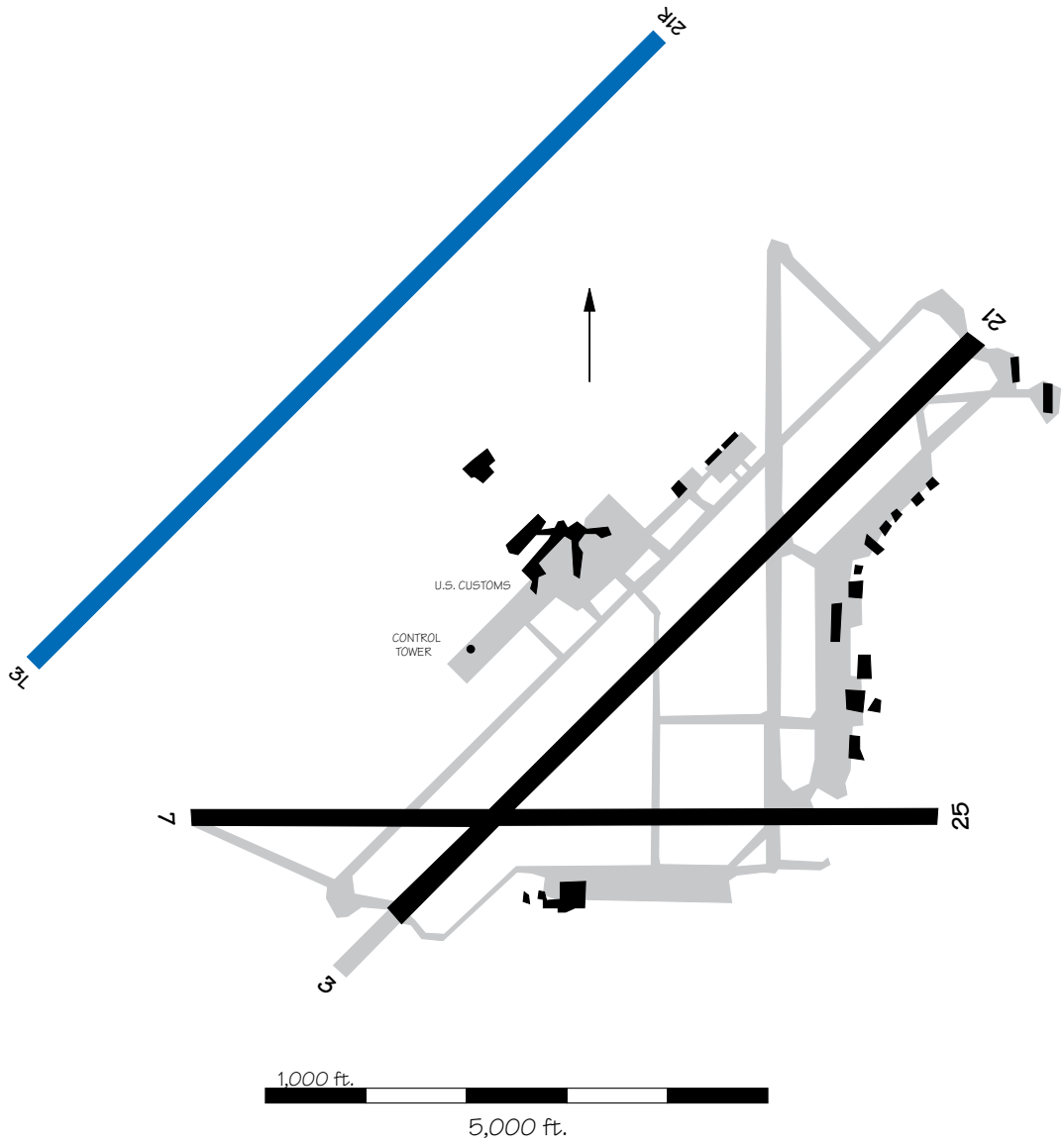
Seattle-Tacoma Int'l Airport (SEA)

Potential airport improvements include a new parallel runway, Runway 16W/34W, which will be located 2,500 feet from Runway 16L/34R. A decision on construction will be made in 1996, and the estimated cost of construction is $400 million.



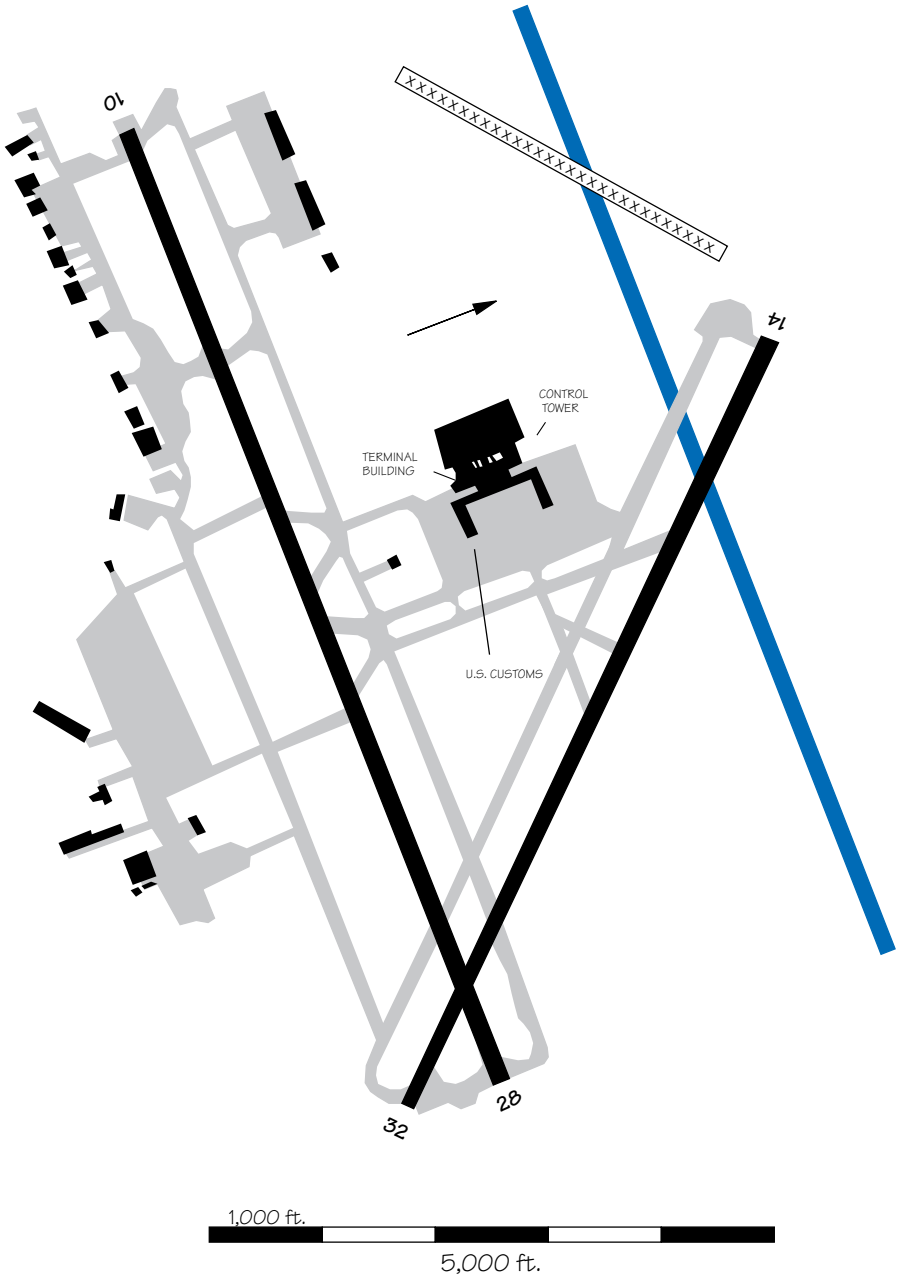
Spokane Int'l Airport (GEG)

Future projects include the construction of a new parallel Runway 3L/21R. The new runway will be 8,800 feet long by 150 feet wide and will be separated from Runway 3R/21L by 4,400 feet. This would enable independent parallel operations, doubling hourly IFR arrival capacity. The estimated cost of construction of the new runway is approximately $11 million. Construction is expected to start in 1999 and should be completed in 2001.



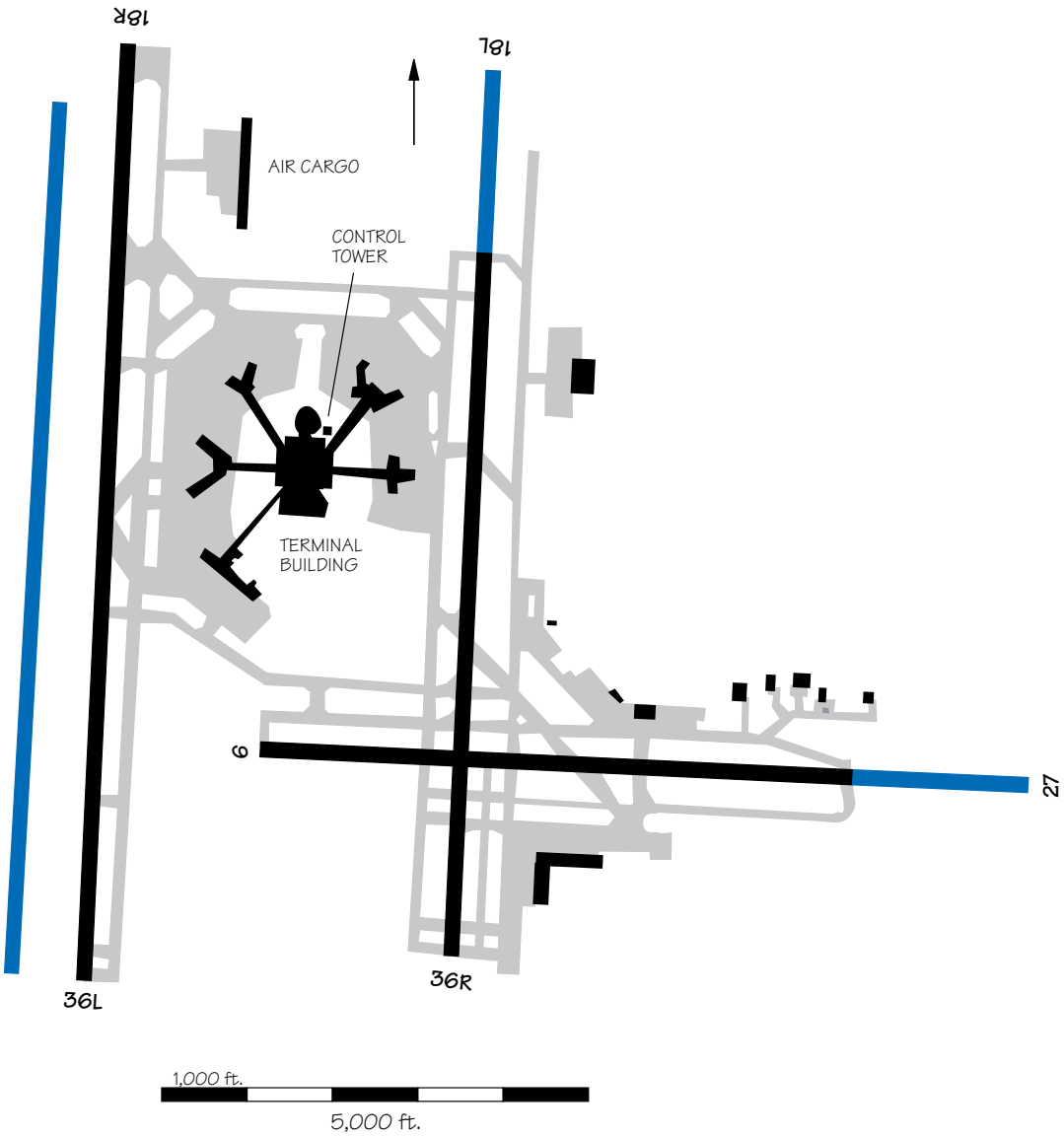
Syracuse Hancock Int'l Airport (SYR)

A new parallel Runway 10L/28R, 9,000 feet long and separated from the existing Runway 10/28 by 3,400 feet is being considered. It would provide independent parallel IFR operations, doubling hourly IFR arrival capacity. The expected operational date is 2000. The cost of construction is estimated to be $46 million for the first phase of the new runway, which would be 7,500 feet long, including a parallel taxiway and connections to the ramp. The final length of the runway will be 9,000 feet.



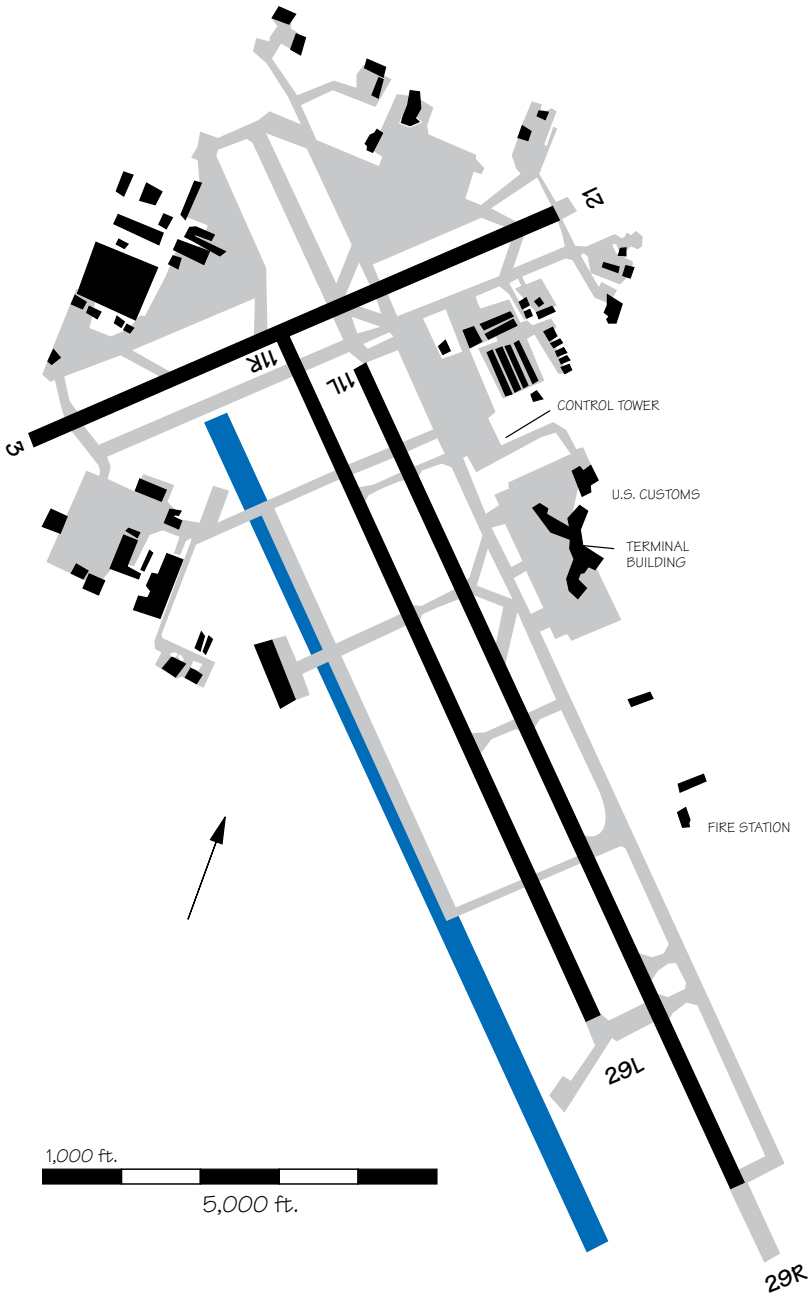
Tampa Int'l Airport (TPA)

A third parallel Runway 18R/36L 9,650 feet long and 700 feet west of Runway 18L/36R is being considered. Construction is expected to be completed by 2000, and the estimated cost of construction is $55 million. An extension of Runway 18L is also being considered for the timeframe beyond 2005, and an extension of Runway 27, for the timeframe beyond 2010.



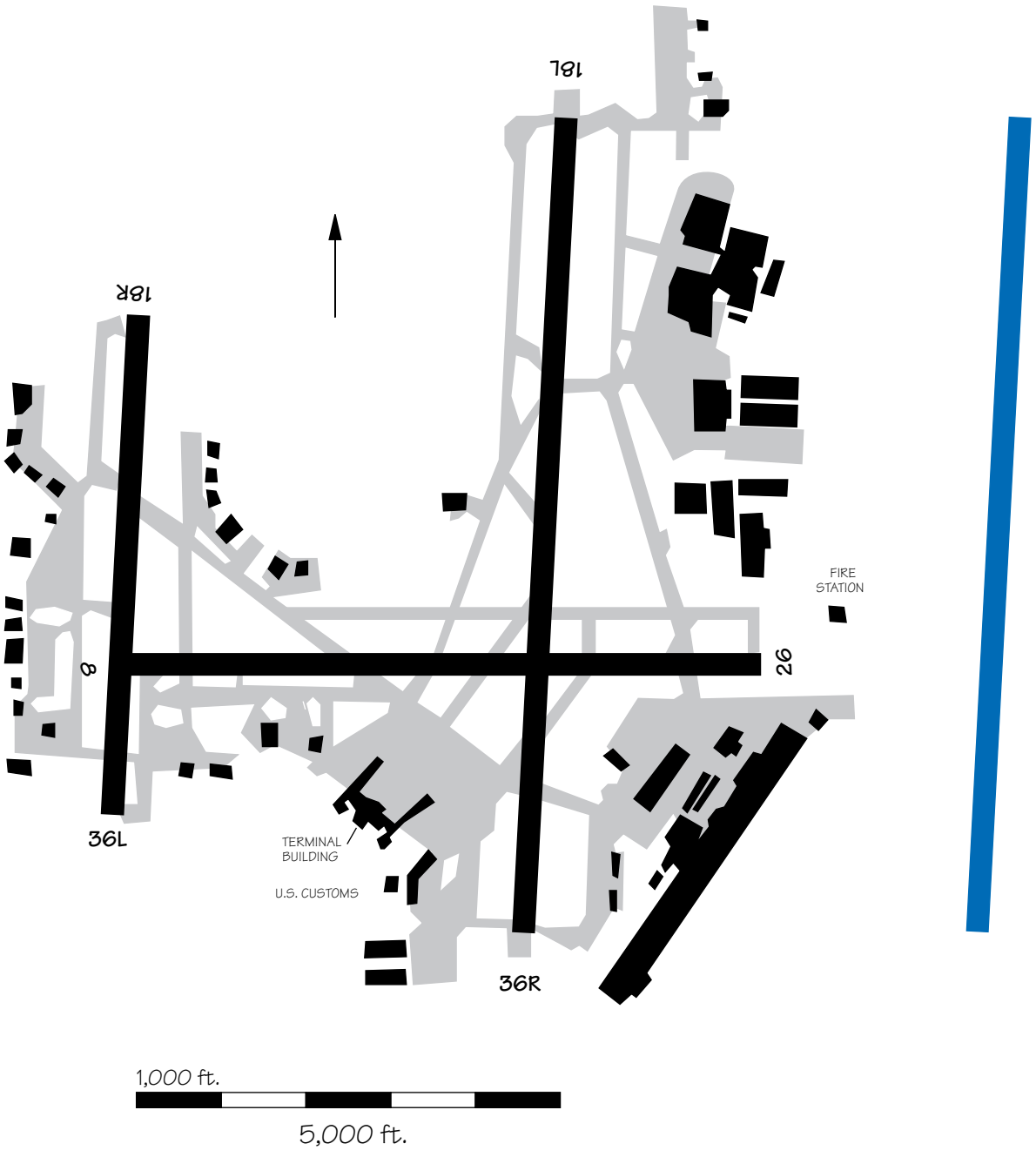
Tucson Int'l Airport (TUS)

An additional parallel air carrier runway, Runway 11R/29L, has been proposed. Upon completion of the new runway, the current Runway 11R/29L, a general aviation runway, will revert to its original taxiway status. It is not anticipated that the sponsor will proceed before 1998. Current plans call for construction to start in 2003 to be operational in 2005. The cost of construction is estimated to be $30 million.



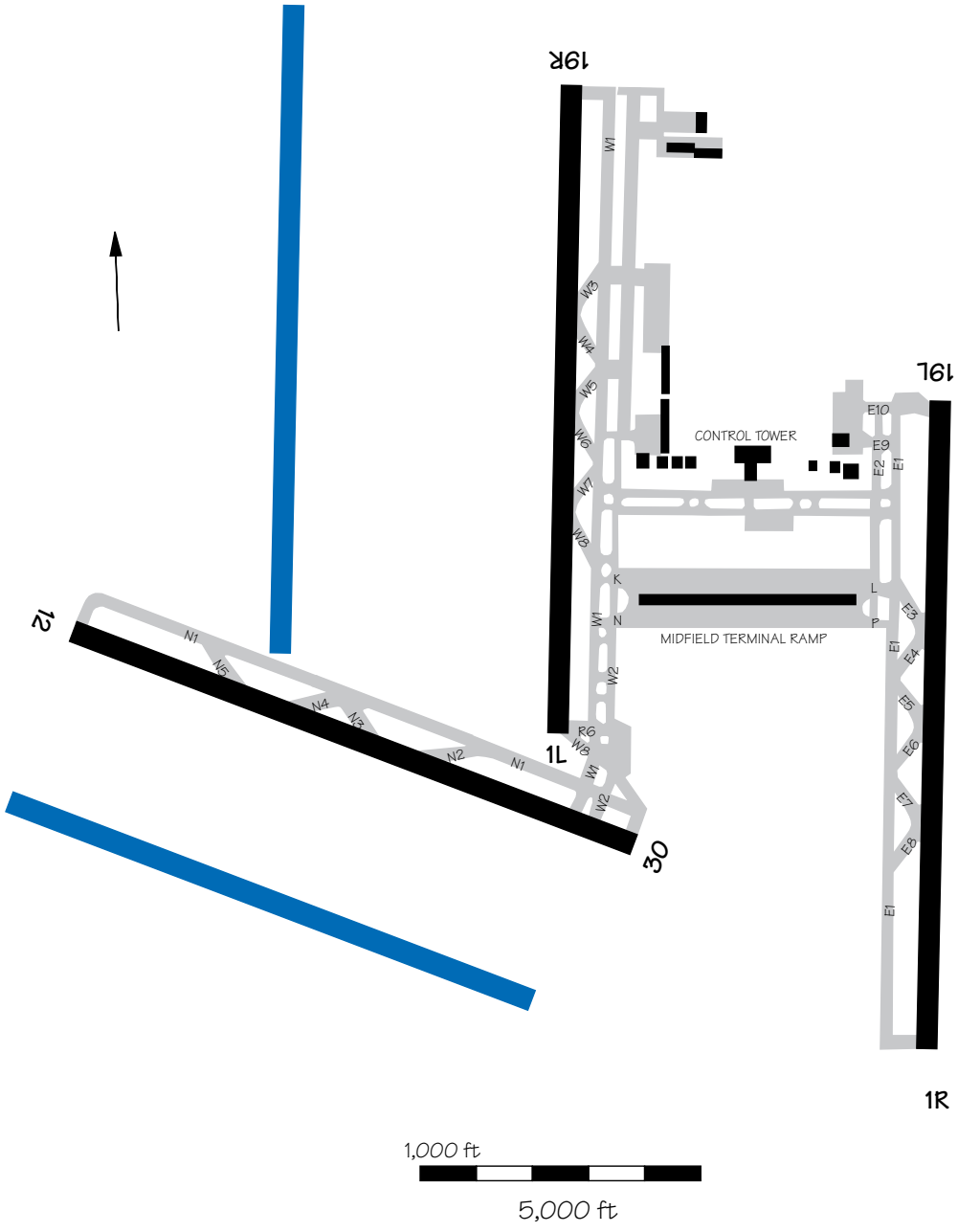
Tulsa Int'l Airport (TUL)

A new parallel runway, Runway 18L/36R, is being considered to be located 5,200 feet east of the present 18L/36R and will be 9,600 feet long. The cost of the new runway is estimated to be $115 million. The new runway could permit IFR triple independent approaches, if approved, to Runways 18L, 18C, and 18R.



Washington Dulles Int'l Airport (IAD)

Two new parallel runways are under consideration. A north-south parallel, Runway 1W/19W, would be located 5,000 feet west of the existing parallels and north of Runway 12/30. Estimated opening date is 2009. This could provide triple independent parallel approaches, if they are approved. A second parallel Runway 12R/30L has been proposed for location 3,000 feet southwest of Runway 12/30. The runway is expected to be completed by 2010. The estimated total cost of construction is $140 million for both runways.



William B. Hartsfield Atlanta Int'l Airport (ATL)

A fifth parallel runway, 6,000 feet long and 3,850 to 4,150 feet south of Runway 9R/27L, is being planned. The runway will permit triple independent IFR approaches using the PRM. The total estimated cost is $160 million. The estimated operational date is 1999.